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FISHERY STATISTICS OF THE WESTERN PACIFIC, VOLUME IV

Territory of American Samoa (1987)

Commonwealth of the
Northern Mariana Islands (1987)

Territory of Guam (1987)

State of Hawaii (1987)

COMPILED BY

David C. Hamm and Michael M. C. Quach
Southwest Fisheries Center Honolulu Laboratory
National Marine Fisheries Service, NOAA
Honolulu, Hawaii 96822-2396

NOT FOR PUBLICATION

ADMINISTRATIVE REPORT

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PREFACE

In recent years, the demand for data and information concerning marine fisheries has greatly increased. To help meet these increased needs in the central and western Pacific areas, the National Marine Fisheries Service's Southwest Fisheries Center initiated the Western Pacific Fishery Information Network (WPACFIN), which assists Pacific island fisheries agencies in upgrading their data collecting, processing, and reporting capabilities. Several agencies are participating in this program: the National Marine Fisheries Service's Southwest Fisheries Center and its Honolulu Laboratory, and the Southwest Region and its Western Pacific Program Office, American Samoa's Department of Marine and Wildlife Resources, the Commonwealth of the Northern Mariana Islands' Division of Fish and Wildlife, Guam's Division of Aquatic and Wildlife Resources, Hawaii's Division of Aquatic Resources, and the Western Pacific Regional Fishery Management Council.

In 1982, these agencies formed a Fisheries Data Coordinating Committee (FDCC) and a FDCC Technical Subcommittee to help guide, coordinate, and monitor all of the many activities being undertaken by each agency to improve their systems. Significant progress has been made by all participating agencies, particularly in the areas of upgrading data collecting and processing systems.

As a major step in improving and coordinating the data reporting and distributing systems of the agencies, in May 1985, the FDCC agreed to begin producing a combined document reporting each island's major fisheries statistics. Production of the document would be the responsibility of the FDCC Technical Subcommittee and would be coordinated by the WPACFIN program manager. Each agency would supply required summaries, graphs, and text for its respective chapter of the report; WPACFIN would combine the chapters and distribute the document as part of the Administrative Report Series of the Southwest Fisheries Center.

This document is the fourth volume in the series "Fishery Statistics of the Western Pacific" and contains summaries of commercial and creel survey fishery landings data for 1987 for American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and Hawaii. The first three volumes of this series contained similar reports for these areas for 1979 through 1986.

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BACKGROUND

This report has been compiled by governmental fisheries agencies of several islands in the central and western Pacific area in a cooperative and continuing effort to improve the availability and dissemination of fisheries information. The data contained herein have been collected, computerized, edited, and processed by agencies participating in the Western Pacific Fishery Information Network (WPACFIN), including American Samoa's Department of Marine and Wildlife Resources (DMWR), the Commonwealth of the Northern Mariana Islands' (CNMI) Division of Fish and Wildlife (DFW), Guam's Division of Aquatic and Wildlife Resources (DAWR), Hawaii's Division of Aquatic Resources (HDAR) and the Southwest Fisheries Center's (SWFC) Honolulu Laboratory, National Marine Fisheries Service (NMFS). The data summaries and graphs contained in this document were prepared by WPACFIN staff at the Honolulu Laboratory from data collected by WPACFIN or provided by these agencies. Data from DMWR, DFW, and DAWR were supplied on floppy diskettes in established WPACFIN data base formats, whereas data on the Guam commercial fisheries were collected on forms provided to fish wholesalers by WPACFIN. Data for Hawaii were provided by HDAR on computer tape. Once data from all of these agencies were put into the proper format on the central WPACFIN computer and appropriate edit and verification procedures completed, summary reports and files were produced using software developed specifically for this purpose. Graphs were produced using commercially available software and a lazerjet printer.

PROGRESS

In 1981, when WPACFIN began assisting agencies in improving their data collecting and processing systems, only the State of Hawaii had computerized processing. By mid-1982, fisheries offices in American Samoa, Guam, and the CNMI had implemented computerized processing on microcomputers supplied by WPACFIN. Since that time, these agencies have made many significant improvements to their data collecting systems and have established sound automated data processing systems. Most agencies can now provide fishery statistics to WPACFIN within 45 days of the date of collection. The HDAR has also improved its systems in recent years and has significantly reduced the lag time in data processing from about 2.5 years to less than 1 year. It has also improved the procedures used for editing, updating, and processing Hawaii's data. Implementation of additional planned improvements could reduce the lag time to about 6 months.

PRECAUTIONS

Data collecting and processing systems vary greatly among Pacific island fisheries agencies. Although much standardization has taken place and is continuing, there remain many unique aspects of each island's systems based on local needs and capabilities. When using summaries contained in this report, especially if making comparisons, one should keep in mind the nature of the systems used to produce the data. For instance, Hawaii's data are based on mandatory monthly reporting by licensed commercial fishermen, CNMI's data are based on voluntary monthly reporting of fish buyers using government-provided invoices, Guam's data are from WPACFIN-sponsored voluntary reporting by major commercial dealers and DAWR-operated creel survey sampling and data expansion programs, and American Samoa's data are based on an integration of almost daily interviews of fishermen and a creel survey and data expansion program similar to Guam's. Each system has advantages and disadvantages, and the user should be aware of them when comparing or interpreting data.

The user should also be aware that species assemblages vary among island groups, as do cultural preferences and principal fishing techniques. Population size is of particular importance when making interpretations of the relative value and importance of the fisheries. To help the user make these value judgments, more detailed explanations of the data collecting and processing systems are provided in each island's section of this report.

CONTENTS

This document is divided into sections by island group. Each section contains reports on the monthly and annual landings by species or species groups for the commercial fleet. The sections for American Samoa and Guam also contain estimates of total catch and effort of all fisheries including recreational and subsistence fishing activities. These estimates and their associated confidence limits were generated by computer-based data expansion systems using sample fishery data collected by creel survey programs. Commercial landings for American Samoa were calculated based on information gathered during the offshore creel survey sampling program. Two sets of annual summaries are included for Hawaii, one each for commercial landings that were sold and not sold.

Definitions

In addition to the description of the systems and the monthly and annual reports, each section contains graphs of some

of the summary fishery statistics of particular interest or importance to participating WPACFIN agencies. For purposes of graphical presentation of the data, several categories have been defined for each island's fisheries. Because of differences in reporting systems and capabilities among the islands, species contained within each category may vary, but all categories are documented in each island's section. Overlap exists among some of the categories used for different graphs. Categories used in the graphs include the following:

1. Fisheries Categories - These are combinations of species of similar ecological types, specifically, pelagic, bottom fish, reef fish, and "other." "Other" includes groups that generally traverse these categories, such as sharks and certain jacks, or are not typically included in these groups, such as mullet and milkfish.
2. Pelagic Management Unit Species (PMUS) - Defined in the Fishery Management Plan for pelagic species to include the billfishes, wahoo, mahimahi, and sharks.
3. Bottom Fish Management Unit Species (BMUS) - Defined as the species of initial importance in the Fishery Management Plan for bottom fish and seamount fisheries, including the major deepwater snapper, grouper, emperor, and certain jacks.
4. Tunas - Predominantly skipjack and yellowfin tunas in all areas, but also including most other tuna species and excluding wahoo.
5. Other Tunas - All tunas as defined above, but excluding skipjack and yellowfin tunas.
6. Billfish - Combination of all marlin, sailfish, spearfish, and swordfish species.
7. Other Methods - In the American Samoa and Guam sections, fishing methods other than trolling and bottom fishing are combined into this single "other" category for certain graphs.

Graphics

A minimum of four types of graphs are provided with each island's data. The chapters for American Samoa and Guam have an additional type of graphics on catch and effort from their creel survey data. Type I graphs present summary charts of the major species and species groups for 1987. Type II graphs are seasonality plots for the major species or species groups,

showing the average weight landed during each month for all years combined. Type III graphs are based on annual summary statistics and help visualize the variability among years. Type IV graphs are plots of monthly landings of some of the major commercially important species and document fluctuations in landings of these species over the entire time series. Type V graphs are based on creel survey data and include plots of catch and effort by fishing method plus a combination of several of the types I-IV graphs.

I. Monthly graphs for each year's data including:

- A. Major fisheries categories
- B. Tunas, PMUS, and BMUS
- C. Wahoo, mahimahi, and billfish
- D. Skipjack, yellowfin, and other tunas

II. Plots of average monthly landings for:

- A. Tunas, PMUS, and BMUS
- B. Wahoo and mahimahi
- C. Billfish species:
 - 1. Marlin and sailfish - American Samoa and CNMI
 - 2. Blue marlin, black marlin, and striped marlin - Hawaii
 - 3. Sailfish, shortbill spearfish, and swordfish - Hawaii
- D. Skipjack, yellowfin, and other tunas
- E. BMUS and the most important bottom fish species
 - 1. BMUS, ehu, and onaga - American Samoa
 - 2. BMUS, emperor, and grouper - CNMI and Guam
 - 3. BMUS, onaga, and opakapaka - Hawaii
 - 4. BMUS, ehu, and uku - Hawaii

III. Graphs of annual summary statistics for:

- A. Major fisheries categories
- B. Total commercial landings - pounds and dollars
- C. Tunas, PMUS, and BMUS
- D. Wahoo, mahimahi, and billfish
- E. Skipjack, yellowfin, and other tunas

IV. Graphs of monthly landings over the entire time series for the following major species:

- A. Wahoo - All four areas
- B. Mahimahi - All four areas
- C. Blue marlin - All four areas
- D. Black marlin - Hawaii
- E. Striped marlin - Hawaii
- F. Sailfish - American Samoa, Guam, and Hawaii

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- G. Shortbill spearfish - Guam and Hawaii
 - H. Swordfish - Hawaii
 - I. Skipjack tuna - All four areas
 - J. Yellowfin tuna - All four areas
 - K. Opakapaka - Hawaii
 - L. Onaga - American Samoa and Hawaii
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Territory of American Samoa

1987 Fishery Statistics

AMERICAN SAMOA 1987 FISHERY STATISTICS

Compiled By

American Samoa

Department of Marine and Wildlife Resources

and the

Western Pacific Fishery Information Network

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AMERICAN SAMOA 1987 FISHERY STATISTICS

INTRODUCTION

American Samoa (approximately lat. 14°S, long. 170°W) is composed of the major island of Tutuila, where about 87% of the total population of 35,000 live; Aunu'u, a small island less than 1 mile off Tutuila's southeast shore; the Manu'a Islands of Ofu, Olesaga, and Ta'u, located about 105 km (65 miles) east of Tutuila and having about 4,300 residents; the uninhabited Rose Atoll, some 290 km (180 miles) east of Tutuila; and Swain's Island about 350 km (220 miles) north of Tutuila, where approximately 20 people live. The American Samoa Department of Marine and Wildlife Resources (DMWR), formerly the Office of Marine Resources, located in Pago Pago on Tutuila, has been collecting commercial fisheries data from the local fleet on Tutuila since the early 1970's and from the Manu'a Islands since 1983. Most data collected over the years have been from the commercial fleet, but beginning in October 1985, DMWR's data collection programs were modified to include data on recreational and subsistence fisheries as well.

The domestic fisheries of American Samoa are typically small boat, one-day fisheries. Although one domestic longliner operated for a few years, the majority of the fleet is composed of two types of 28- to 29-foot outboard engine powered catamarans called alias and manta cats. During 1987, 34 boats were sampled, 32 from Tutuila and 2 from the Manu'a Islands. Fishing is mostly by trolling and bottom fishing methods, and the majority of the catch is sold locally, but some is exported to Hawaii. During 1987, on average, trips on boats from Tutuila had three-man crews, fished 10 hours, and caught a little over 200 pounds of fish.

DATA COLLECTING SYSTEM

The major method used by DMWR for obtaining catch statistics has always been interviewing fishermen at the end of their trips. Before October 1985, the DMWR data collectors kept records of as much commercial fishing activity as possible and routinely obtained interviews from fishermen as often as possible. This method of data collection provided accurate data on the commercial fleet for the trips where interviews were conducted, but was very labor intensive, did not cover all trips, and intentionally excluded the recreational and subsistence fisheries. Therefore, in October 1985, a new sampling program was implemented on Tutuila to provide better coverage and statistics for all boat-based fisheries. The new sampling methods were not implemented in the Manu'a Islands because the fishing fleet is centrally located and is small enough that statistics

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were being collected for nearly every trip.

The new sampling program for Tutuila was based on a survey design that had been used in Guam for about 4 years. This systematic, random sampling program stratifies sampling by type of day, either weekday or weekend-holiday. For the new program, DMWR staff normally sample 2 weekdays and 1 weekend-holiday per week. In addition, they obtain as many interviews as possible on their "off days" to maintain as much overall coverage of the fisheries as possible. During official survey days, counts of total participation are collected to facilitate expansion of the survey data to estimates of total catch and effort for Tutuila. Unless contrary information is available, a boat is assumed to be fishing if it is "out," as evidenced by its trailer at a boat ramp or being missing from its normal berthing area. Tutuila is divided into six areas, five of which are sampled. Presumably, fishing activity and success rate of boats in the non-sampled area are similar to those in the sampled areas. Further assumptions are that information given by the fishermen during the interview is accurate and that the fishermen interviewed are representative of the entire fishing population.

Survey data are collected in the field on interview log sheets and returned to the DMWR office for editing. The following information is collected for each interview:

- * Date
- * Type of day
- * Time
- * Boat name
 - Captain or boat owner's name
- * Method of fishing
- * Disposition of catch
- * Species caught
 - Number of pieces for each species
- * Weight in pounds for each species
 - Price per pound for each species
 - Area fished
- * Home island
 - Number of trips since last interview
- * Total trip weight in pounds
 - Total hours fished (trip length)
 - Number of fishermen
 - Number of gear used

It is not always possible for the interviewer to obtain information on all items listed. However, the ones marked with an asterisk (*) are considered essential for data expansion purposes. The "TIME" field is used to distinguish between interviews collected on survey days versus "off days." Only data collected on official survey days are used in the data

II.3

expansion process. Identification and weight of each species are often not obtainable; in which case, a code for species groupings (e.g., miscellaneous bottom fish) is used.

DATA PROCESSING SYSTEM

Interview forms are returned to the office, edited, coded, and entered into computerized data bases--the commercial landings data base for data collected before October 1985, and the offshore creel survey data base for data collected since then. Edit and summary reports are produced to help verify that the data were entered correctly. The creel survey data bases are then translated into standard record formats to be used by the American Samoa Offshore Expansion System (ASOES), programmed by WPACFIN specifically for DMWR. As data are converted into ASOES formats, additional error checks are performed by the computer to make sure only valid information enters the expansion system. The ASOES is a menu-driven system that steps the user through a series of processes that summarize creel survey data to produce catch and effort expansion and species composition files and reports. Typically 1 month of data is processed at a time, although the system allows for processing broader time increments of data.

The expansion system generates estimates of daily catch, effort, and participation for each fishing method. These daily estimates are considered measurements of the Tutuila fisheries for that day. Average weekday and weekend-holiday estimates and their associated variances or confidence intervals are created from individual daily measurements. These are weighted by the number of each type of day in the month, or other timespan being expanded, and multiplied by proportionality constants that adjust for percent coverage to produce estimates of total catch, effort, and participation along with their confidence intervals. Percent species composition by weight is calculated from the sampled catch and used to create estimates of total landings by species by multiplying the sampled percent by the expanded estimated catch. All steps in the expansion process are stratified by fishing method. The ASOES produces reports and files of the final totals for all important catch and effort statistics. These files are later used to produce the reports contained in this document. On a quarterly basis, copies of the DMWR data bases are sent to the Honolulu Laboratory for updating the central WPACFIN files.

At the Honolulu Laboratory, the data are translated into different formats and transferred to the central computer for further editing, verification, and processing before generation of summary reports. Because DMWR changed their data collecting systems during 1985, new processing procedures were established

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by WPACFIN to standardize reports as much as possible to facilitate comparisons between years. Data collected before October 1985 were adjusted upward by the percent coverage to account for missed trips. The offshore creel survey data collected since October 1985 were expanded to estimates of total Tutuila landings using ASOES and then separated into commercial versus noncommercial landings (e.g., sold versus not sold). The expansion and separation algorithms stratify the data by fishing method to improve the final estimates of landings by species. After the file of estimated commercial landings for Tutuila was created from the ASOES files, the adjusted commercial landings for Manu'a were added to it, thereby creating the commercial landings data base for American Samoa. Additionally, because price information was not obtained for all landings that were sold, the commercial data were edited to create price information when none was available. To accomplish this, a three-tiered editing system was designed to "create" price estimates based on the best information available. The edit system puts average price information in each record where it is missing, based on the following three levels of available information:

1. If price information is available for the same species in the same month, the weighted average price per pound is written into all records missing that information for that species and month.
2. If no price information is available for the same species and same month, the annual weighted average price for that species is written into records for that species and month.
3. If no price information is available for a species for the entire year, the program prompts the user for input and updates the file based on the response.

As data base records are updated, each is flagged to indicate which level of estimation was used for the price information. This makes it possible to easily exclude the "created" data, if desired, when doing economic analysis.

DATA REPORTING SYSTEM

After all editing, quality control, and other processing activities are completed on the central WPACFIN computer, monthly and annual commercial landings reports by species are prepared. Volume I of this series presented unadjusted commercial landings information for 1982-84. Because the new system produces reports of commercial landings that have been adjusted or expanded from data base figures to estimates of

II.5

total commercial landings, new annual reports for adjusted commercial landings for 1982-84 were presented in Volume III as were reports of monthly and annual estimated total commercial landings by species for 1985-86. This volume contains similar monthly and annual reports for 1987.

Each of the commercial landings reports contains the common name, weight in pounds, value in dollars, and the average price per pound of each species or species group. Each monthly report contains a subtotal for the sum of all species for that month, and the December report contains the December subtotal and the annual total. Annual reports contain the total estimated commercial landings for each species and for all species combined for the calendar year.

Estimated total landings reports are provided for Tutuila. Because a typhoon virtually eliminated the entire Manu'a fishing fleet in December 1986, only 1209 pounds of commercial fish landings were recorded for those islands in 1987, therefore, no Manu'a reports are presented in this volume. Two types of total landings reports are included from the creel survey data expansion system, ASOES, for Tutuila: catch and effort expansion reports and species composition reports. These reports were produced by using the expansion and species composition files created by ASOES as input to utility programs developed by WPACFIN. The utility programs reorganize, format, and summarize data from ASOES files to improve the presentation of data and reduce the amount of space required to report the important statistics. Monthly and annual estimated total landings reports for 1987 include the expansion summary of catch and effort statistics by fishing method and the summary species composition reports for all methods combined.

Monthly expansion and species composition reports have matching totals for catch by fishing method since the monthly species composition reports are based on the expansion files. Annual expansion and species composition reports also have identical totals because the species reports were generated from the annual expansion files. However, the totals on the annual report will not equal the total obtained by adding all of the monthly files together because the annual expansion reports were generated by re-expanding the entire year's data together, thereby increasing the sample size significantly, and it is hoped, improving the annual estimates of percent species composition and of catch and effort and their associated coefficients of variation (CV's). The annual species composition report was created by calculating annual percentages of species composition by combining all sampling for the year and then multiplying these percentages by the annual expansion totals. This allows calculation of annual percent species composition based on greatly increased sample size.

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Computer generated numbers and all totals in the reports are subject to rounding error. All catches are reported in pounds, and effort, in boat hours. In the offshore expansion reports, the boat counts by fishing method will not add to the total boat count when the same boat was used for more than one method on a single trip. In these cases, the boat is included in the count for each method used but included only once in the total count. A CV is included for each statistic in the expansion reports. The CV provides a measurement of the relative variation associated with the estimate preceding it and is calculated by dividing the standard error of the estimate by the estimate and multiplying by 100 and rounding to express the answer as a whole percentage. The larger the CV, the larger the relative variation in the data used to generate the estimate and, therefore, the less precise the estimate. An asterisk following a line means the number of samples collected for that method during that month were insufficient to properly calculate the CV. There must be at least two weekday and two weekend-holiday samples for each method to properly compute a standard error and, therefore, properly compute the CV. If an asterisk is present and the CV is greater than zero, then samples on either weekdays or weekend-holidays were sufficient to compute a standard error for that type of day but not for the other type of day. In this case, the CV provided in the report is for the type of day in which sample information met the minimum requirements for calculating CV. If an asterisk is present and the CV equals zero, then neither type of day had sufficient number of samples to calculate CV. It follows then, anytime an asterisk is present for any of the fishing methods, the totals for the month are questionable.

In fisheries applications, calculation of catch per unit of effort (CPUE) may be done in several ways. In the ASOES expansion reports, average monthly CPUE is calculated by using the same type of algorithm as for the other expansion elements, and it has an associated CV. First, the average daily CPUE is calculated by dividing the total weight of the fish sampled for a day by the total number of hours fished to produce that catch. Next, the average weekday and weekend-holiday CPUE's are calculated by summing the average daily CPUE's for each type of day and then dividing by the number of survey days for each type of day. These averages are multiplied by the number of weekdays and weekend-holidays, respectively, in that month, then the products are summed and divided by the total number of days in the month to produce the average monthly CPUE for each fishing method. The average monthly CPUE could also be calculated by dividing the estimated monthly catch by the estimated monthly boat hours, but this would provide no indication of the variability of the CPUE and also essentially weight the average CPUE by the level of participation. Therefore, the CPUE provided

in the monthly and annual expansion reports will not be equal to the catch divided by the effort as presented in those reports.

The following species, species groups, and abbreviations are used in the tables and graphs of American Samoa's data:

I. Pelagic Management Unit Species (PMUS)

- Dolphin (mahimahi)
- Blue marlin
- Black marlin
- Sailfish
- Shortbill spearfish
- Wahoo
- Sharks

II. Bottom Fish Management Unit Species (BMUS)

- Jacks (unclassified)
- Black jack
- Amberjack
- Giant trevally
- Bottom fish (unclassified)
- Groupers (unclassified)
- Blacktip grouper
- Lunartail grouper
- Snappers (unclassified)
- Bluelined snapper
- Gray jobfish (uku)
- Deepwater bottom fish (unclassified)
- Yellow opakapaka
- Hawaiian opakapaka
- Opakapaka
- Gindai (flower snapper)
- Yellowtail snapper
- Lehi (silverjaw snapper)
- Onaga (red or longtail snapper)
- Ehu (red snapper)
- Emperorfish (unclassified)
- Ambon emperor
- Redgill emperor

III. Billfish

- Blue marlin
- Black marlin
- Sailfish
- Shortbill spearfish

IV. Tunas

Tunas (unclassified)
 Skipjack tuna
 Yellowfin tuna
 Dogtooth tuna
 Albacore
 Bigeye tuna
 Kawakawa

V. Other Tuna

The above tuna species excluding skipjack and yellowfin tuna

VI. Fisheries Categories

A. Pelagics

All PMUS and tuna species plus the following:
 Troll fish (unclassified)
 Barracuda
 Rainbow runner

B. Bottom Fish

All BMUS plus the following:
 Bigeye trevally
 Bluefin trevally
 Goldspot trevally
 Trevally
 Whitemouth trevally
 Peacock grouper
 Flagtail grouper
 Tomato grouper
 Yellowspot grouper
 Striped grouper
 Spotted grouper
 Small mouth grouper
 Giant grouper
 Rufous snapper
 Blacktail snapper
 Onespot snapper
 Twinspot/red snapper
 Humpback snapper
 Blood snapper
 Brown snapper
 Bluelined gindai
 Black snapper
 Stone's snapper
 Kusakar's snapper

B. Bottom Fish (cont.)

Bigeye emperor
Goldenline bream
Longnose emperor
Bluelined bream
Orangespot emperor
Snake mackerel
Oilfish

C. Reef Fish

Reef fish (unclassified)
Mullet
Rabbitfish
Surgeonfish and tangs (unclassified)
Lined surgeon
Yelloweyed surgeon
Convict tang
Dussumier's surgeon
Spotted surgeon
Unicornfish
Squirrelfish (unclassified)
Berndt's soldierfish
Bigeye squirrelfish
Parrotfish
Terapon perch
Wrasse
Goatfish (unclassified)
Pink goatfish
Inshore groupers (unclassified)
Triggerfish
Butterflyfish
Porcupinefish
Inshore snappers (unclassified)

D. Other

Miscellaneous
Bigeye scad
Sharks
Rays
Eels
Invertebrates (unclassified)
Crabs (unclassified)
Kona crab
Mangrove crab
Spiny lobster
Slipper lobster
Shrimp

D. Other (Cont)

Octopus
Squid
Clams
Turtle

INTERPRETATION OF STATISTICS

The user is reminded to pay heed to the precautions and assumptions identified earlier in this document, when making interpretations of or inferences from data reported in the tables and graphs. Remember also that neither the commercial landings summaries nor the creel summaries are based on a census of all the fishing activities, but on samples of those activities. One of the major factors in expanding the creel survey data into monthly and annual estimates is the use of proportionality constants to adjust for percent coverage of the surveys. The flexibility of the survey design allows for refinement of these constants as additional information is gained on the fishing activities. If the constants are improved upon, the basic survey data can be re-expanded to create better overall estimates. However, the variability and species composition would not be expected to change since these statistics are strictly based on the actual survey information collected from the fishermen. The estimates of total landings are considered to be conservative because the inshore fisheries are currently not included in DMWR's sampling programs. However, WPACFIN has developed the basic design for inshore sampling and data expansion systems, and DMWR plans to implement them when resources become available.

Table II.1.1

AMERICAN SAMOA 1987 ANNUAL ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
MISCELLANEOUS	24.00	36.00	1.50
JACKS	94.00	131.00	1.39
BLACK JACK	33.00	52.00	1.58
BARRACUDAS	223.00	319.00	1.43
EELS	47.00	63.00	1.34
BOTTOM FISH	28425.00	42217.00	1.49
GROUPERS	14.00	21.00	1.50
TOMATO GROUPER	27.00	40.50	1.50
LUNARTAIL GROUPER	34.00	51.00	1.50
BLUE LINED SNAPPER	150.00	233.50	1.56
ONESPOT SNAPPER	7.00	10.50	1.50
HUMPBACK SNAPPER	34.00	44.50	1.31
GRAY JOBFISH	25.00	37.50	1.50
YELLOW OPAKAPAKA	52.00	208.00	4.00
GINDAI (FLOWER SNAP)	38.00	144.00	3.79
LEHI (SILVERJAW)	81.00	175.00	2.16
ONAGA (RED SNAPPER)	232.00	881.00	3.80
EHU (RED SNAPPER)	298.00	581.50	1.95
EMPERORS (MISC)	16.00	24.00	1.50
AMBON EMPEROR	65.00	104.00	1.60
REEF FISH	26815.00	42565.00	1.59
LINED SURGEON	1306.00	1939.00	1.48
YELLOW EYED SURGEON	320.00	518.00	1.62
CONVICT TANG	23.00	44.00	1.91
UNICORNFISH (MISC)	173.00	255.00	1.47
UNICORNFISH	343.00	451.00	1.31
SQUIRRELFISH	141.00	264.00	1.87
SABER SQUIRRELFISH	11.00	16.50	1.50
PARROTFISH	1024.00	1773.00	1.73
WRASSE	47.00	91.00	1.94
DOLPHIN (MAHIMAHI)	2445.00	3023.00	1.24
BLUE MARLIN	233.00	186.00	0.80
SAILFISH	1153.00	1153.00	1.00
RAINBOW RUNNER	19.00	15.00	0.79
WAHOO	1419.00	1988.00	1.40
SKIPJACK TUNA	104974.00	74325.00	0.71
DOGTUOTH TUNA	1340.00	1337.00	1.00
YELLOWFIN TUNA	30522.00	39207.00	1.28
KAWAKAWA	127.00	127.00	1.00
SPINY LOBSTER	2567.00	4871.00	1.90
** TOTAL **	204921.00	219522.50	

Table II.1.2

AMERICAN SAMOA JANUARY 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BOTTOM FISH	7023.00	9200.00	1.31
HUMPBACK SNAPPER	25.00	31.00	1.24
LEHI (SILVERJAW)	31.00	54.00	1.74
EHU (RED SNAPPER)	223.00	390.00	1.75
REEF FISH	384.00	518.00	1.35
DOLPHIN (MAHIMAHI)	184.00	184.00	1.00
WAHOO	153.00	191.00	1.25
SKIPJACK TUNA	17972.00	14557.00	0.81
DOGTUOTH TUNA	123.00	153.00	1.24
YELLOWFIN TUNA	3979.00	4933.00	1.24
SPINY LOBSTER	153.00	267.00	1.75
 ** SUBTOTAL **	 30250.00	 30478.00	

Table II.1.3

AMERICAN SAMOA FEBRUARY 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BOTTOM FISH	3195.00	4568.00	1.43
WAHOO	98.00	92.00	0.94
SKIPJACK TUNA	9066.00	8068.00	0.89
DOGTUOTH TUNA	44.00	44.00	1.00
YELLOWFIN TUNA	1560.00	1560.00	1.00
 ** SUBTOTAL **	 13963.00	 14332.00	

II.13

Table II.1.4

AMERICAN SAMOA MARCH 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
BOTTOM FISH	4879.00	6781.00	1.39
YELLOW OPAKAPAKA	39.00	156.00	4.00
GINDAI (FLOWER SNAP)	28.00	112.00	4.00
LEHI (SILVERJAW)	31.00	91.00	2.94
ONAGA (RED SNAPPER)	128.00	704.00	5.50
EHU (RED SNAPPER)	19.00	95.00	5.00
BLUE MARLIN	233.00	186.00	0.80
WAHOO	286.00	497.00	1.74
SKIPJACK TUNA	7011.00	6450.00	0.92
YELLOWFIN TUNA	2318.00	2318.00	1.00
** SUBTOTAL **	14972.00	17390.00	

Table II.1.5

AMERICAN SAMOA APRIL 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
BOTTOM FISH	2648.00	4342.00	1.64
YELLOW OPAKAPAKA	13.00	52.00	4.00
GINDAI (FLOWER SNAP)	10.00	32.00	3.20
EHU (RED SNAPPER)	13.00	32.00	2.46
REEF FISH	1346.00	2113.00	1.57
WAHOO	176.00	580.00	3.30
SKIPJACK TUNA	2907.00	2383.00	0.82
YELLOWFIN TUNA	934.00	1111.00	1.19
** SUBTOTAL **	8047.00	10645.00	

Table II.1.6

AMERICAN SAMOA MAY 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
MISCELLANEOUS	24.00	36.00	1.50
BARRACUDAS	24.00	36.00	1.50
BOTTOM FISH	997.00	1455.00	1.46
GROUPERS	14.00	21.00	1.50
TOMATO GROUPER	27.00	40.50	1.50
LUNARTAIL GROUPER	34.00	51.00	1.50
BLUE LINED SNAPPER	57.00	85.50	1.50
ONESPOT SNAPPER	7.00	10.50	1.50
HUMPBACK SNAPPER	9.00	13.50	1.50
GRAY JOBFISH	25.00	37.50	1.50
ONAGA (RED SNAPPER)	12.00	18.00	1.50
EHU (RED SNAPPER)	43.00	64.50	1.50
EMPERORS (MISC)	16.00	24.00	1.50
REEF FISH	4336.00	5810.00	1.34
SQUIRRELFISH	24.00	36.00	1.50
SABER SQUIRRELFISH	11.00	16.50	1.50
DOLPHIN (MAHIMAHI)	321.00	372.00	1.16
SAILFISH	450.00	450.00	1.00
WAHOO	218.00	204.00	0.94
SKIPJACK TUNA	3010.00	2562.00	0.85
DOGTUOTH TUNA	17.00	17.00	1.00
YELLOWFIN TUNA	900.00	982.00	1.09
SPINY LOBSTER	437.00	655.00	1.50
** SUBTOTAL **	11013.00	12997.50	

Table II.1.7

AMERICAN SAMOA JUNE 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
BOTTOM FISH	3271.00	4971.00	1.52
REEF FISH	6328.00	9365.00	1.48
DOLPHIN (MAHIMAHI)	520.00	520.00	1.00
SAILFISH	703.00	703.00	1.00
WAHOO	114.00	107.00	0.94
SKIPJACK TUNA	9754.00	8290.00	0.85
DOGTUOTH TUNA	85.00	106.00	1.25
YELLOWFIN TUNA	2375.00	3277.00	1.38
SPINY LOBSTER	491.00	859.00	1.75
** SUBTOTAL **	23641.00	28198.00	

II.15

Table II.1.8

AMERICAN SAMOA JULY 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BOTTOM FISH	1784.00	2693.00	1.51
REEF FISH	4774.00	8640.00	1.81
DOLPHIN (MAHIMAHI)	103.00	113.00	1.10
SKIPJACK TUNA	3865.00	2860.00	0.74
YELLOWFIN TUNA	817.00	710.00	0.87
SPINY LOBSTER	95.00	142.00	1.49
 ** SUBTOTAL **	 11438.00	 15158.00	

Table II.1.9

AMERICAN SAMOA AUGUST 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BOTTOM FISH	200.00	320.00	1.60
REEF FISH	1910.00	3724.00	1.95
DOLPHIN (MAHIMAHI)	1008.00	1431.00	1.42
SKIPJACK TUNA	7774.00	5752.00	0.74
YELLOWFIN TUNA	1077.00	1270.00	1.18
SPINY LOBSTER	116.00	290.00	2.50
 ** SUBTOTAL **	 12085.00	 12787.00	

Table II.1.10

AMERICAN SAMOA SEPTEMBER 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BARRACUDAS	59.00	73.00	1.24
BOTTOM FISH	487.00	779.00	1.60
REEF FISH	3676.00	6433.00	1.75
DOLPHIN (MAHIMAHI)	216.00	324.00	1.50
SKIPJACK TUNA	11496.00	5862.00	0.51
YELLOWFIN TUNA	4470.00	5721.00	1.28
SPINY LOBSTER	138.00	379.00	2.75
 ** SUBTOTAL **	 20542.00	 19571.00	

Table II.1.11

AMERICAN SAMOA OCTOBER 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BLACK JACK	33.00	52.00	1.58
BARRACUDAS	140.00	210.00	1.50
BLUE LINED SNAPPER	93.00	148.00	1.59
LEHI (SILVERJAW)	19.00	30.00	1.58
ONAGA (RED SNAPPER)	61.00	97.00	1.59
AMBON EMPEROR	65.00	104.00	1.60
REEF FISH	514.00	606.00	1.18
LINED SURGEON	365.00	711.00	1.95
YELLOW EYED SURGEON	40.00	78.00	1.95
CONVICT TANG	23.00	44.00	1.91
UNICORNFISH (MISC)	70.00	136.00	1.94
SQUIRRELFISH	117.00	228.00	1.95
PARROTFISH	257.00	501.00	1.95
WRASSE	47.00	91.00	1.94
DOLPHIN (MAHIMAHI)	93.00	79.00	0.85
WAHOO	374.00	317.00	0.85
SKIPJACK TUNA	2739.00	2492.00	0.91
DOGTUOTH TUNA	1071.00	1017.00	0.95
YELLOWFIN TUNA	9251.00	12858.00	1.39
SPINY LOBSTER	575.00	1150.00	2.00
 ** SUBTOTAL **	 15947.00	 20949.00	

Table II.1.12

AMERICAN SAMOA NOVEMBER 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
BOTTOM FISH	2222.00	4444.00	2.00
REEF FISH	1457.00	2054.00	1.41
LINED SURGEON	542.00	634.00	1.17
YELLOW EYED SURGEON	149.00	257.00	1.72
UNICORNFISH (MISC)	56.00	56.00	1.00
UNICORNFISH	168.00	196.00	1.17
PARROTFISH	429.00	759.00	1.77
RAINBOW RUNNER	19.00	15.00	0.79
SKIPJACK TUNA	13077.00	7061.00	0.54
YELLOWFIN TUNA	2264.00	3712.00	1.64
KAWAKAWA	127.00	127.00	1.00
SPINY LOBSTER	187.00	364.00	1.95
 ** SUBTOTAL **	 20697.00	 19679.00	

Table II.1.13

AMERICAN SAMOA DECEMBER 1987 ESTIMATED COMMERCIAL LANDINGS

SPECIES	POUNDS	VALUE	\$/LB
-----	-----	-----	-----
JACKS	94.00	131.00	1.39
EELS	47.00	63.00	1.34
BOTTOM FISH	1719.00	2664.00	1.55
ONAGA (RED SNAPPER)	31.00	62.00	2.00
REEF FISH	2090.00	3302.00	1.58
LINED SURGEON	399.00	594.00	1.49
YELLOW EYED SURGEON	131.00	183.00	1.40
UNICORNFISH (MISC)	47.00	63.00	1.34
UNICORNFISH	175.00	255.00	1.46
PARROTFISH	338.00	513.00	1.52
SKIPJACK TUNA	16303.00	7988.00	0.49
YELLOWFIN TUNA	577.00	755.00	1.31
SPINY LOBSTER	375.00	765.00	2.04
 ** SUBTOTAL **	 22326.00	 17338.00	
 ** TOTAL **	 204921.00	 219522.50	

Figure II.1.1

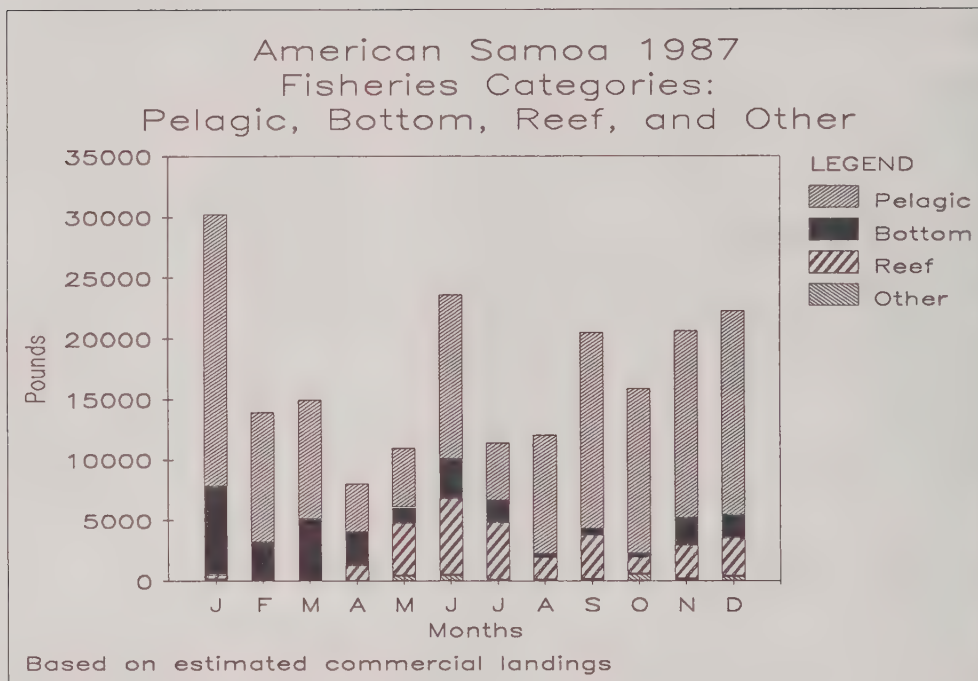


Figure II.1.2

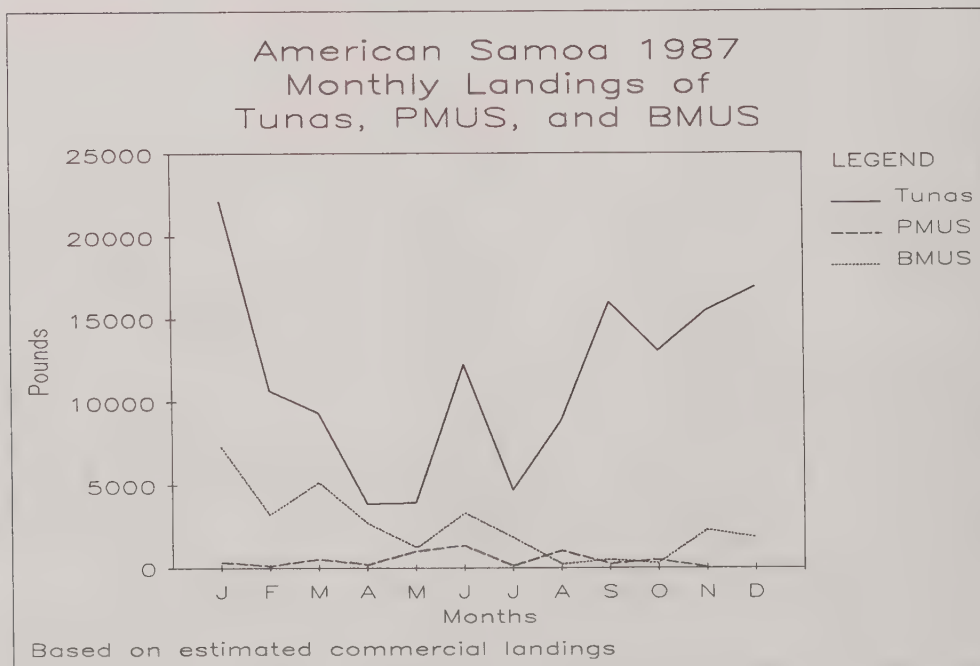


Figure II.1.3

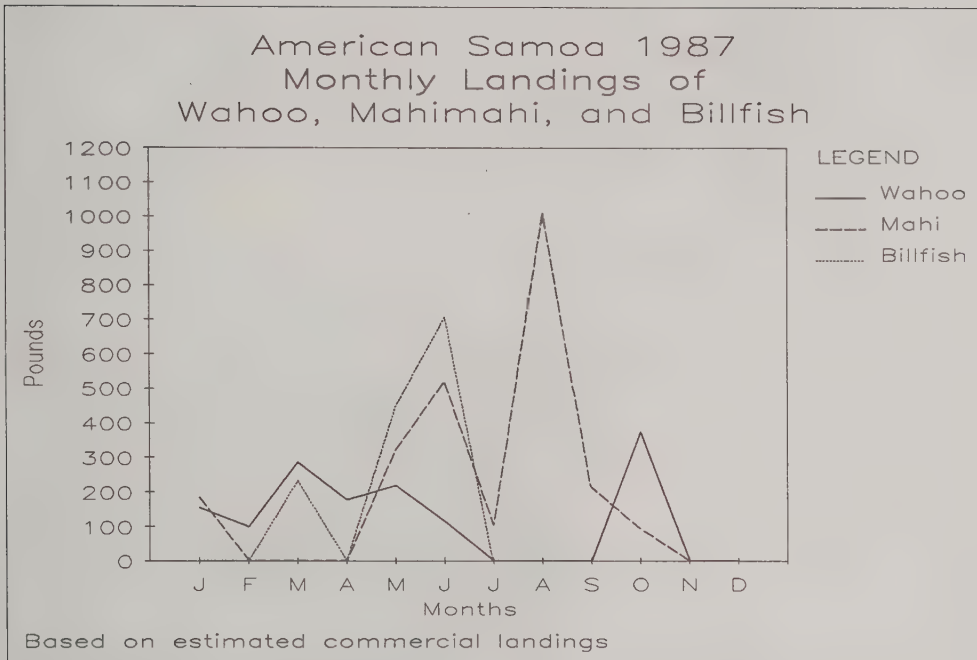


Figure II.1.4

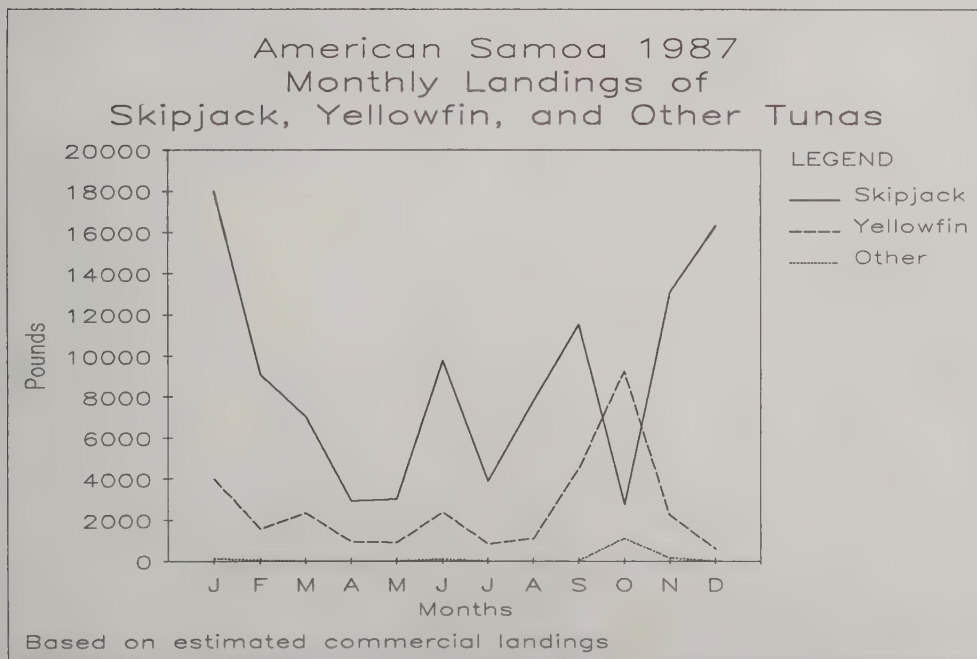


Figure II.2.1

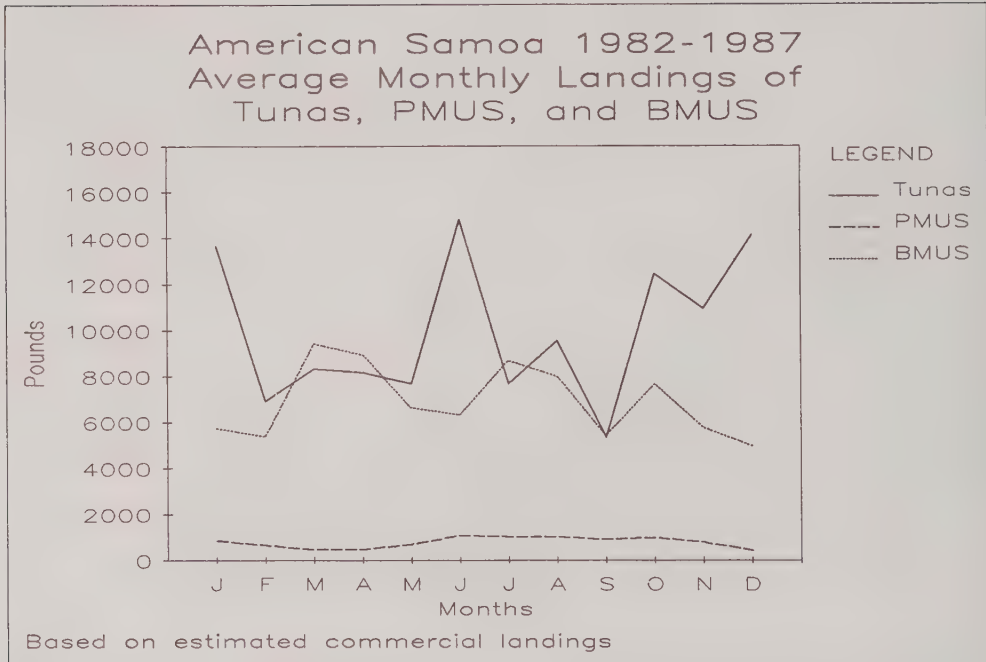


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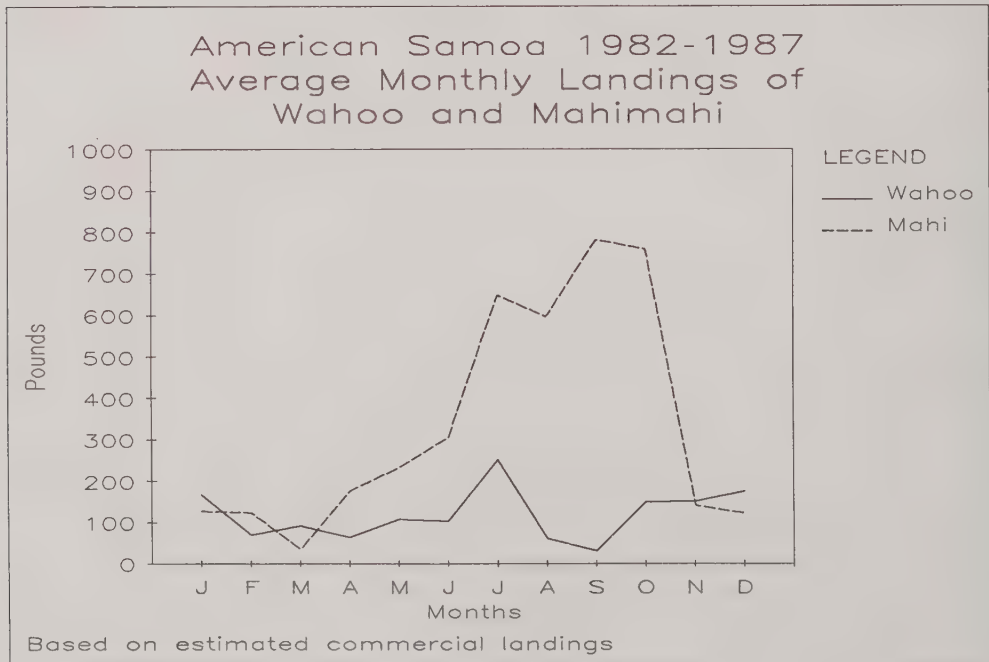


Figure II.2.3

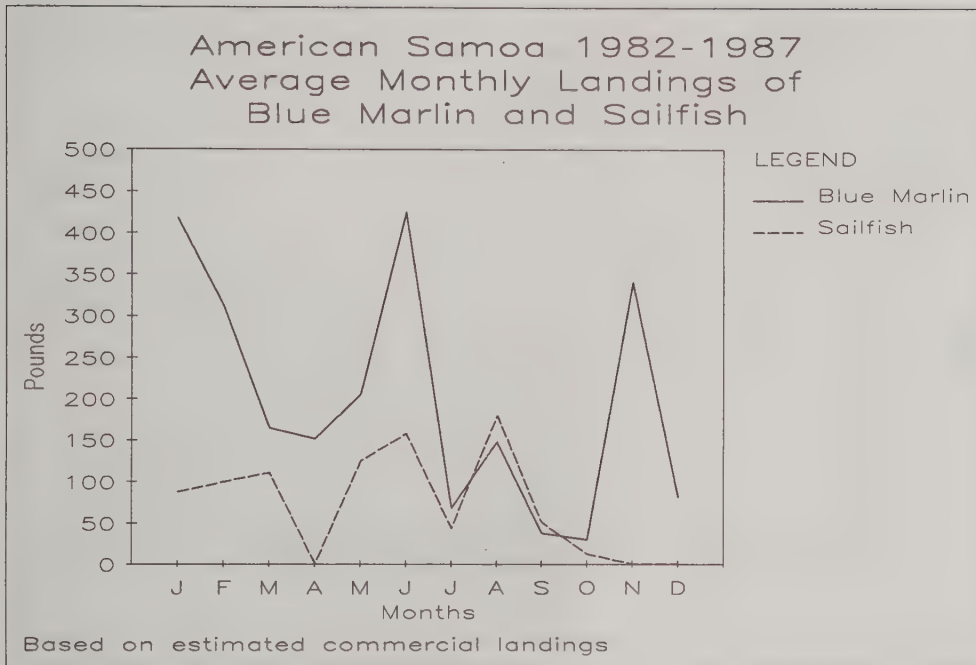


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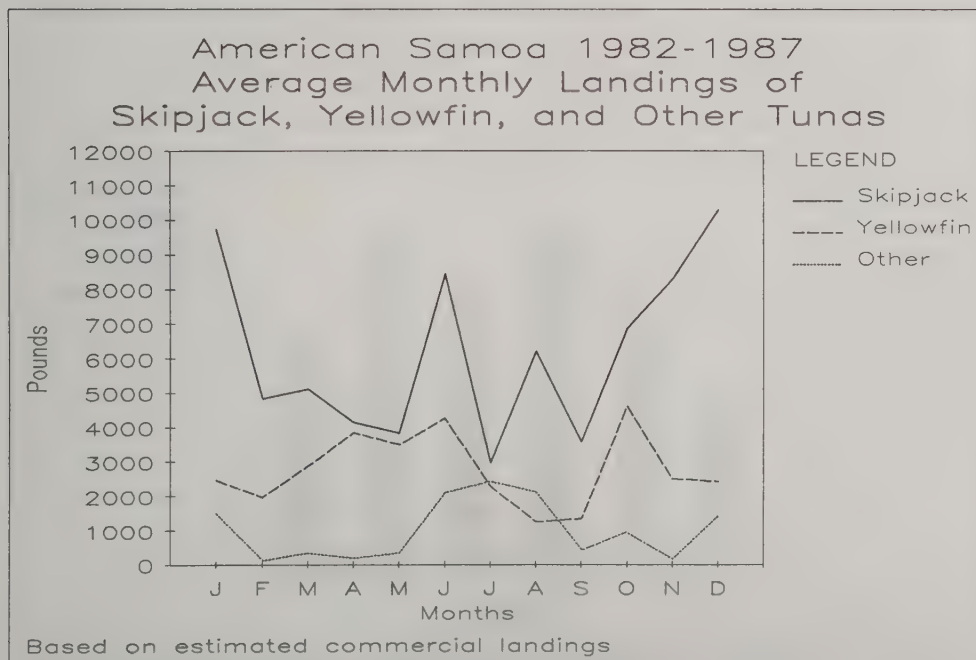


Figure II.2.5

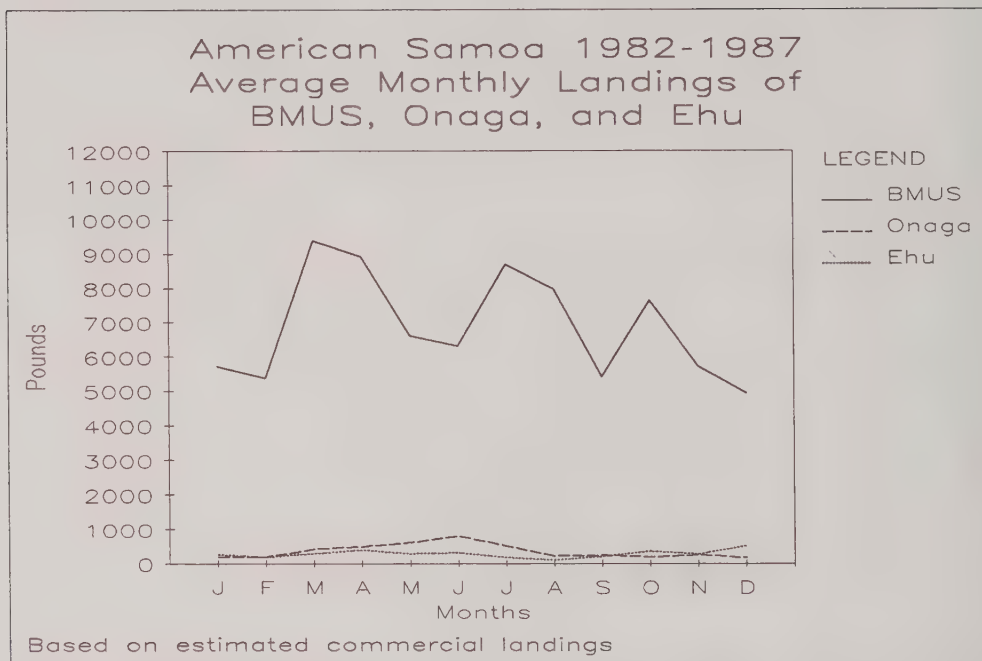


Figure II.3.1

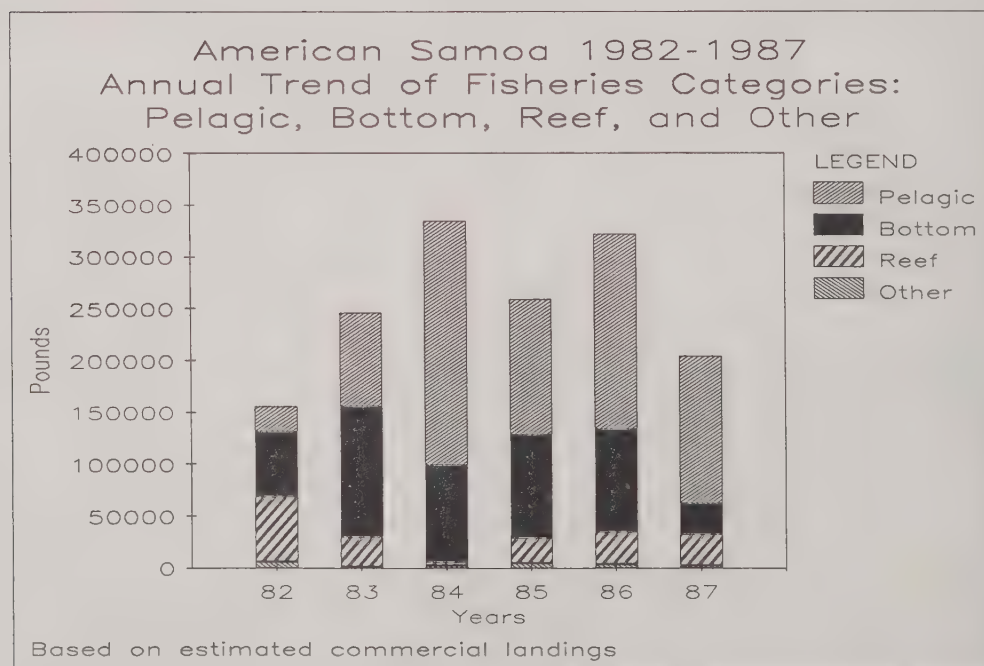


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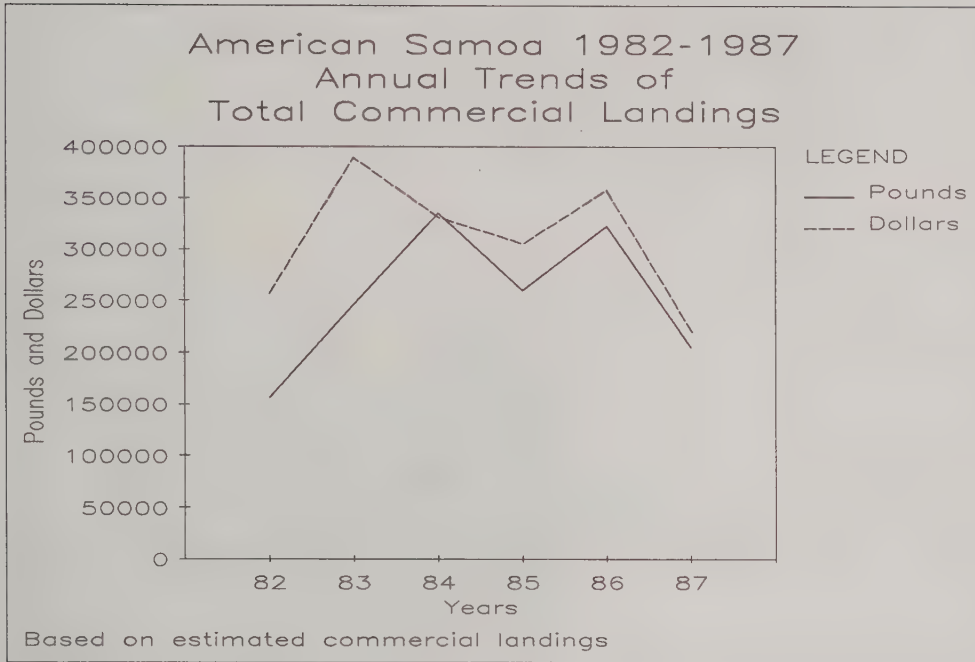


Figure II.3.3

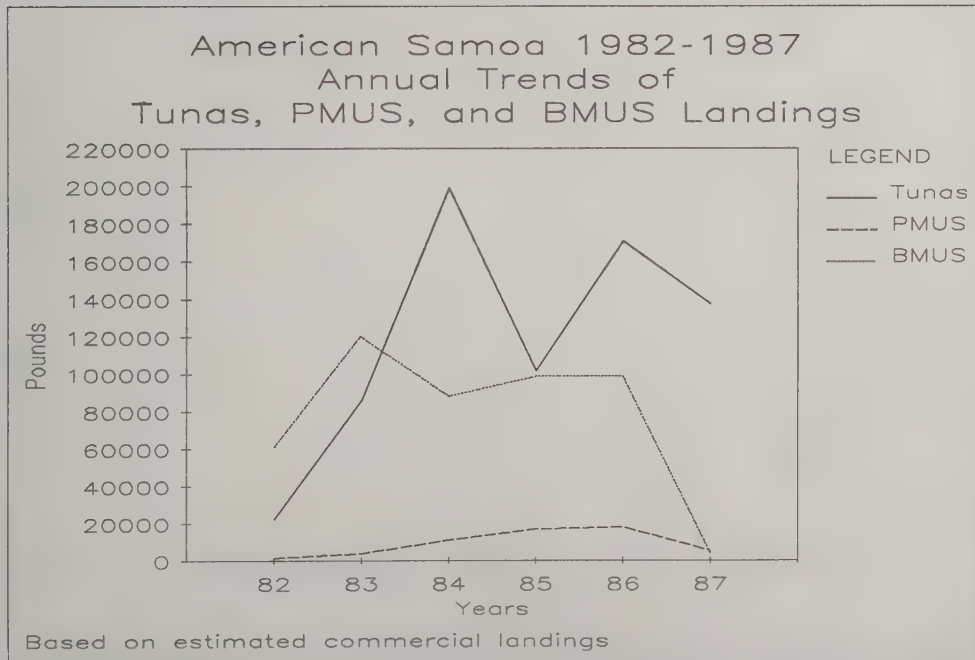


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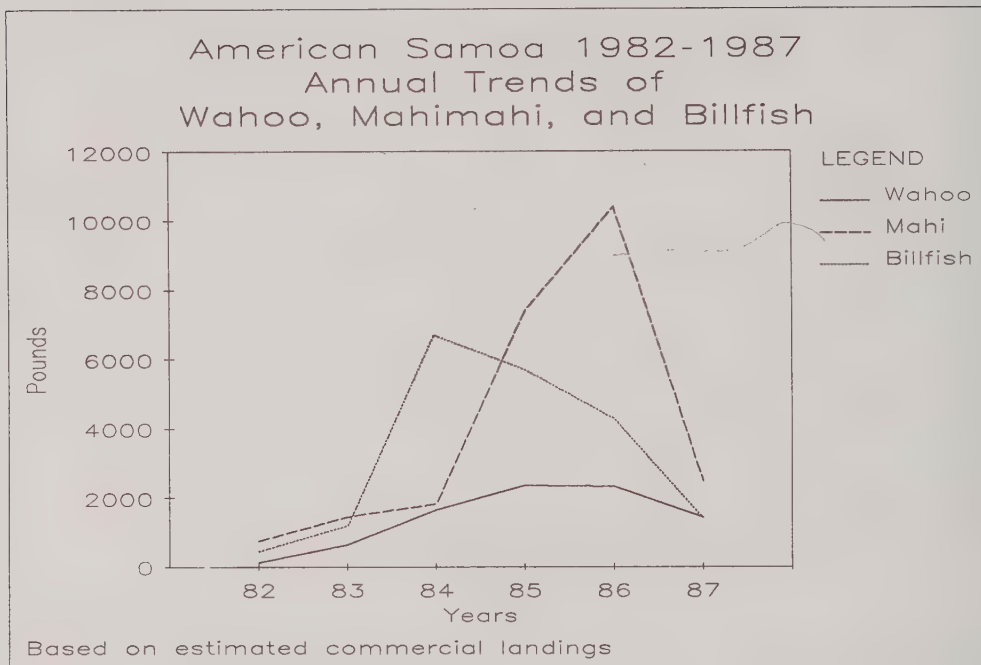


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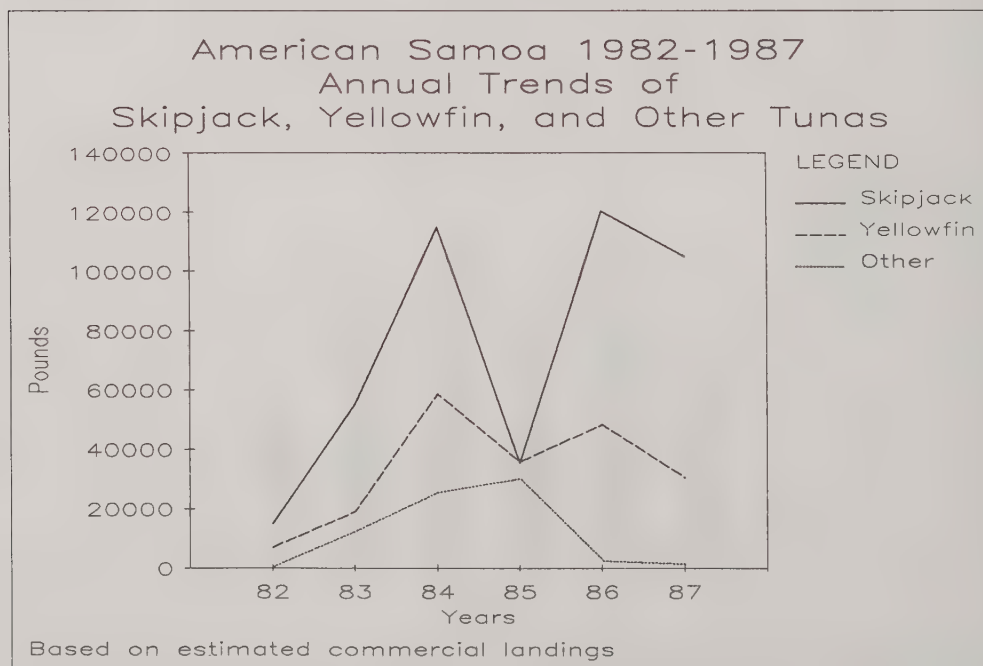


Figure II.4.1

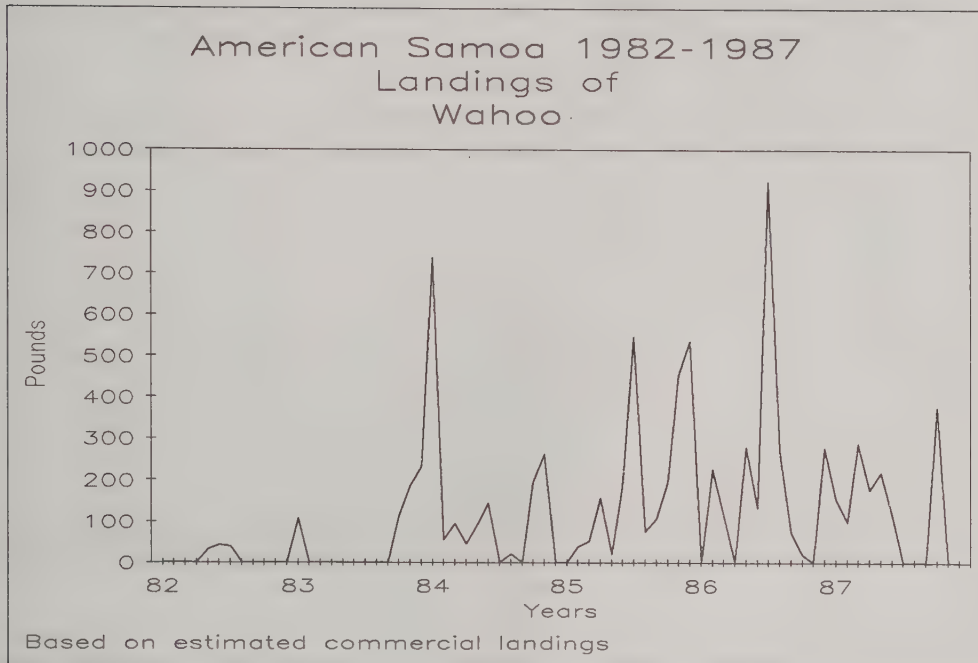


Figure II.4.2

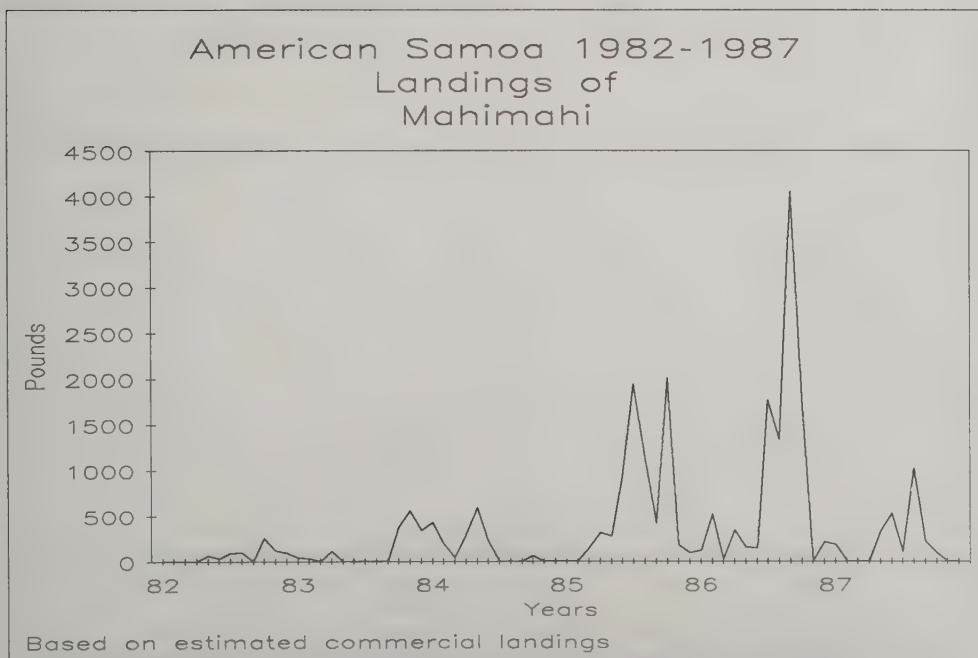


Figure II.4.3

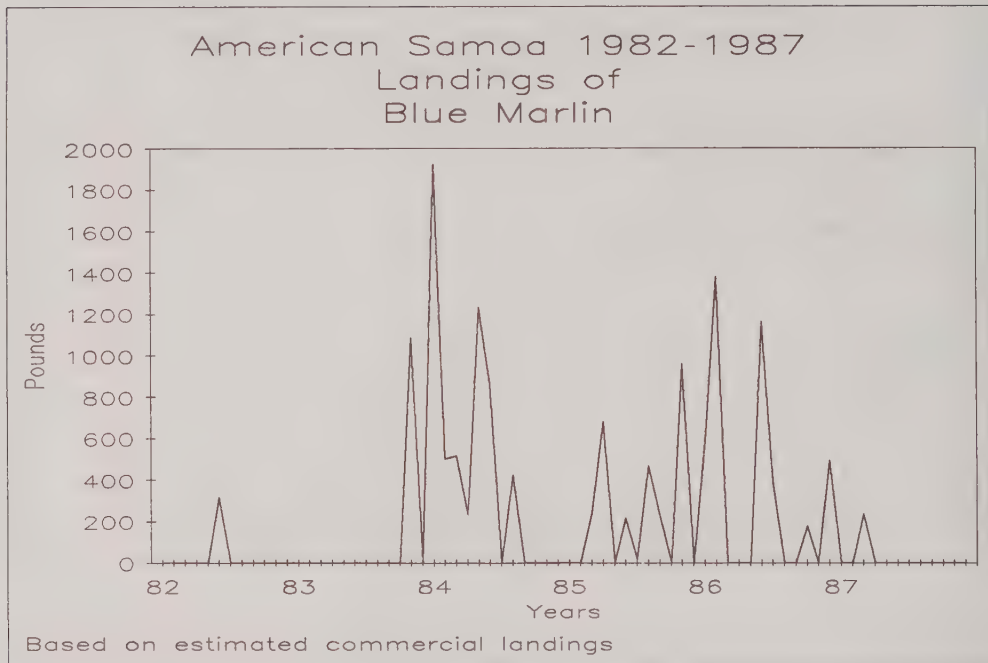


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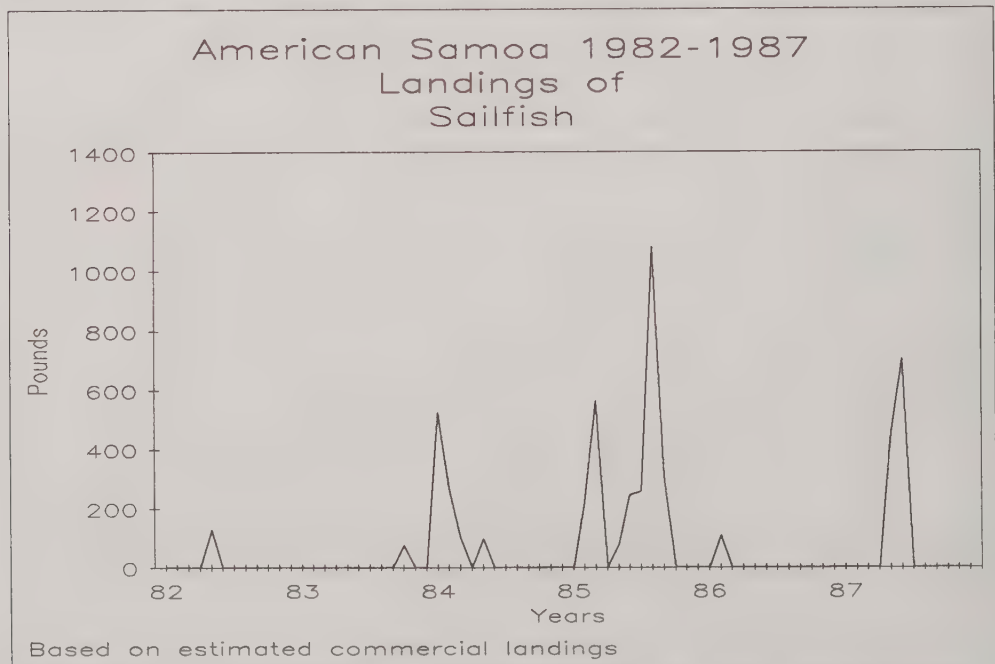


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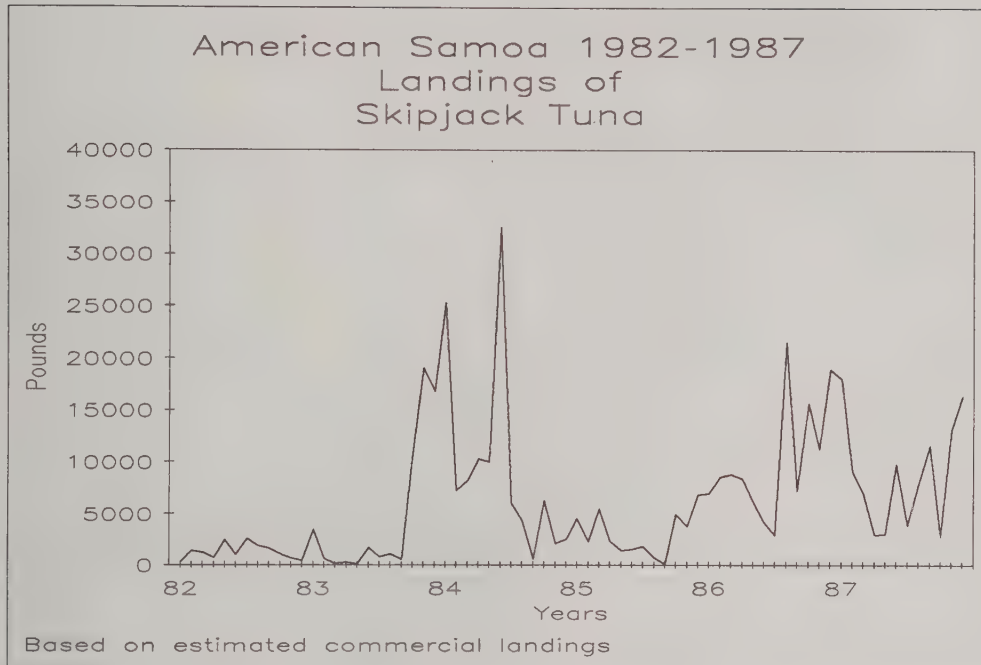


Figure II.4.6

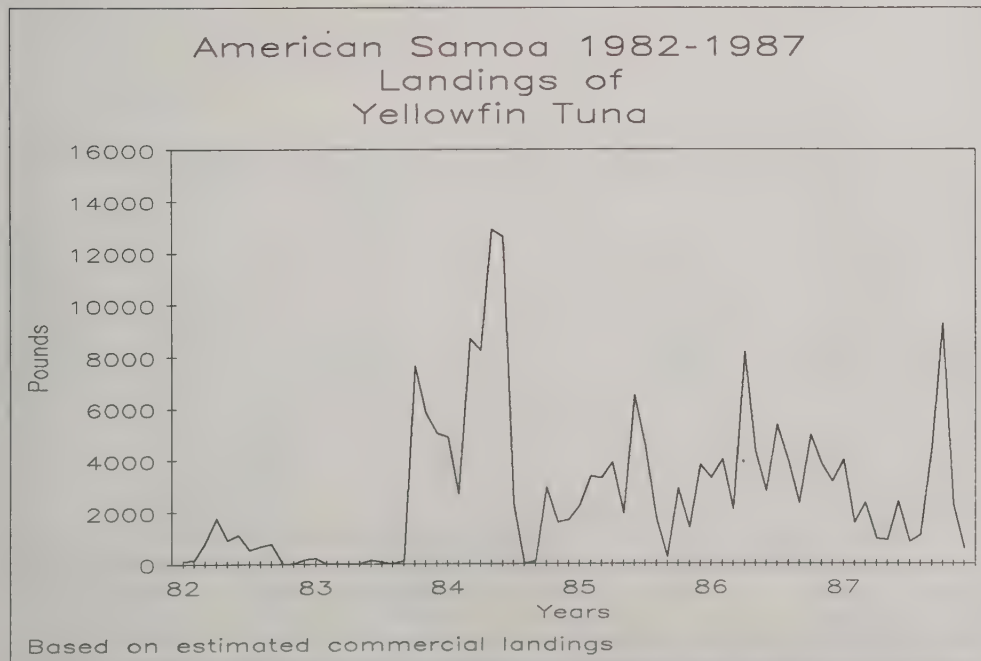


Figure II.4.7

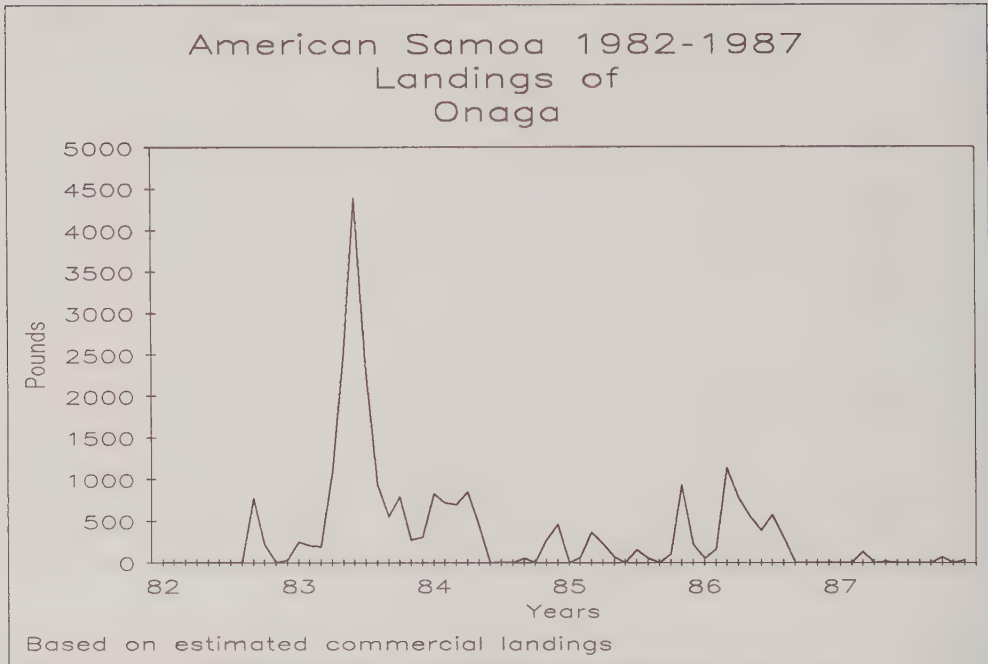


Figure II.4.8

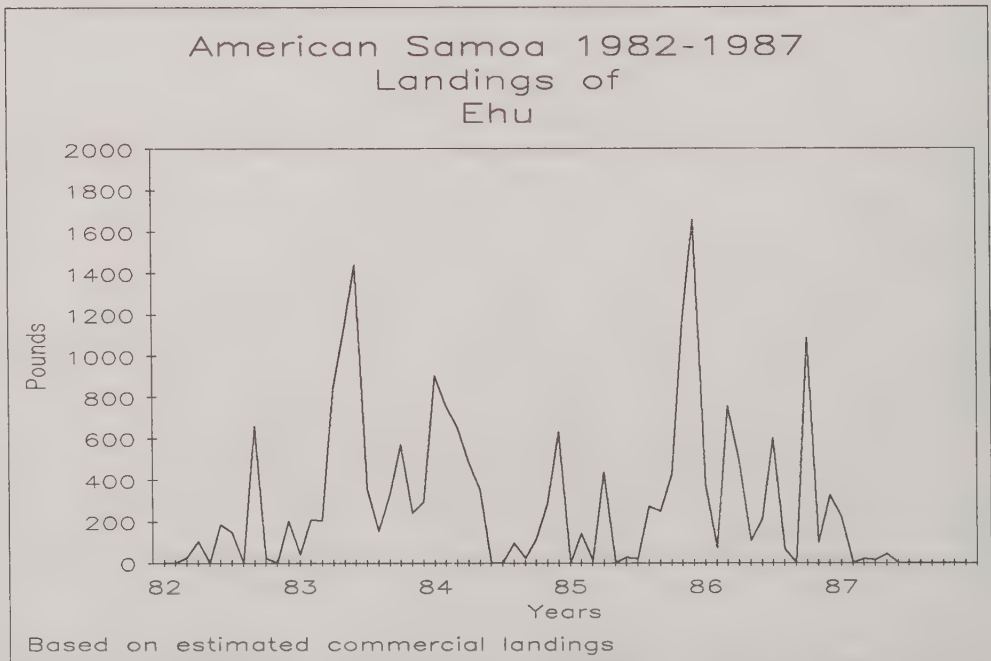


Table II.2.1

TUTUILA 1987 ANNUAL
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
JACKS	167.3	0.07	BLACK JACK	21.5	0.01
BARRACUDAS	148.9	0.07	SHARKS	5312.5	2.35
EELS	55.5	0.02	BOTTOM FISH	29706.8	13.17
BLUE LINED SNAPPER	61.6	0.03	TWINSPO/RED SNAPPER	98.5	0.04
HUMPBACK SNAPPER	24.7	0.01	YELLOW OPAKAPAKA	57.0	0.03
GINDAI (FLOWER SNAP)	41.6	0.02	LEHI (SILVERJAW)	75.5	0.03
ONAGA (RED SNAPPER)	206.3	0.09	EHU (RED SNAPPER)	258.7	0.11
AMBON EMPEROR	43.1	0.02	REEF FISH	29618.9	13.13
LINED SURGEON	1274.7	0.56	YELLOW EYED SURGEON	335.1	0.15
CONVICT TANG	18.5	0.01	UNICORNFISH (MISC)	157.3	0.07
UNICORNFISH	374.0	0.17	SQUIRRELFISH	92.6	0.04
PARROTFISH	1000.0	0.44	WRASSE	37.0	0.02
DOLPHIN (MAHIMAHI)	3079.5	1.36	BLUE MARLIN	246.2	0.11
SAILFISH	1257.2	0.56	RAINBOW RUNNER	249.8	0.11
WAHOO	1753.1	0.78	SKIPJACK TUNA	117647.1	52.14
DOGTTOOTH TUNA	1184.7	0.53	YELLOWFIN TUNA	28058.8	12.44
KAWAKAWA	150.5	0.07	SPINY LOBSTER	2804.4	1.24
TOTAL ALL SPECIES:	225618.8	100.00			

Table II.2.2

TUTUILA 1987 ANNUAL
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	144587.6	9	5578.1	7	682.9	7	16033.6	7	1968.6	7	26.3	9
BOTTOM FISH	8110.4	28	672.2	27	59.5	28	1701.9	28	154.4	30	12.2	15
TROLL-BOTTOM	36855.3	15	2824.9	14	173.3	12	6851.9	13	435.4	12	13.8	10
SPEARING	36065.5	15	1465.6	14	197.5	15	6764.1	14	911.2	15	25.9	8
TOTAL:	225618.8	7	10540.8	6	1091.6	6	31351.5	6	3413.2	7	24.2	8

II.30

Table II.3.1

TUTUILA JANUARY 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	20946.9	21	785.0	16	86.7	15	2350.5	16	258.6	16	25.4	12
BOTTOM FISH	1314.3	64	175.9	60	14.7	62	419.3	63	35.2	65	6.8	25*
TROLL-BOTTOM	8412.6	28	592.0	26	35.3	26	1386.3	26	82.4	25	16.4	24
SPEARING	513.1	78	29.3	78	2.9	78	117.3	78	11.7	78	17.5	0*
TOTAL:	31186.9	19	1582.3	16	139.7	15	4273.3	15	388.0	15	21.0	14

Table II.3.2

TUTUILA FEBRUARY 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	11398.4	22	687.8	16	75.7	17	2195.7	18	245.9	20	15.9	22
BOTTOM FISH	1515.0	78	75.0	78	5.0	78	187.5	78	12.5	78	20.2	0*
TROLL-BOTTOM	2821.4	26	325.4	33	17.1	27	728.6	31	39.1	26	10.2	14
TOTAL:	15734.8	21	1088.2	16	97.8	15	3111.7	15	297.5	17	14.7	17

Table II.3.3

TUTUILA MARCH 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	8392.7	31	529.7	28	46.8	28	1338.9	30	119.3	31	14.1	12
TROLL-BOTTOM	8189.5	26	662.1	25	42.8	27	1587.2	26	103.5	29	12.6	19
TOTAL:	16582.2	22	1191.8	21	89.6	22	2926.1	22	222.8	23	13.7	11

* Not enough data to properly compute Coefficient of Variation (CV).

II.31

Table II.3.4

TUTUILA APRIL 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	2865.2	40	165.0	26	23.7	24	367.1	25	52.2	24	14.5	30
BOTTOM FISH	266.7	75	28.1	75	2.3	75	28.1	75	2.3	75	9.5	0*
TROLL-BOTTOM	3882.5	63	336.0	58	14.1	51	672.0	58	28.3	51	9.6	24*
SPEARING	1200.0	49	102.9	53	7.0	53	507.6	49	35.1	49	13.4	52*
TOTAL:	8214.3	32	632.0	32	47.2	21	1574.8	30	117.9	24	13.1	33

Table II.3.5

TUTUILA MAY 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	4491.8	26	302.0	25	39.2	26	663.0	29	88.9	30	17.3	21
TROLL-BOTTOM	1468.7	54	102.4	51	7.3	52	307.1	51	21.9	52	13.7	24*
SPEARING	4768.8	46	110.9	45	16.1	43	641.4	51	91.4	49	42.8	16*
TOTAL:	10729.3	29	515.2	26	62.6	24	1611.6	29	202.2	28	23.7	19

Table II.3.6

TUTUILA JUNE 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	13506.5	23	452.8	25	57.5	24	1412.7	27	178.9	27	20.0	20
BOTTOM FISH	938.3	62	106.2	62	9.7	63	212.3	62	19.5	63	8.8	0*
TROLL-BOTTOM	4199.4	44	295.1	37	16.9	39	715.3	43	40.9	45	8.6	27
SPEARING	6963.0	39	206.2	38	23.1	37	1267.9	38	142.9	37	19.1	35
TOTAL:	25607.1	19	1060.2	18	107.1	17	3608.1	20	382.1	19	13.4	21

* Not enough data to properly compute Coefficient of Variation (CV).

II.32

Table II.3.7

TUTUILA JULY 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	5696.4	38	251.9	43	31.8	41	711.8	45	90.9	43	5.5	30
BOTTOM FISH	1529.2	82	120.1	82	13.0	82	360.4	82	39.0	82	4.2	224*
TROLL-BOTTOM	1377.3	54	116.9	54	7.8	54	350.6	54	23.4	54	3.0	60
SPEARING	4711.7	38	171.1	39	22.1	39	781.7	38	99.4	37	10.7	38
TOTAL:	13314.6	29	660.1	34	74.7	33	2204.5	32	252.6	30	6.2	21

Table II.3.8

TUTUILA AUGUST 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	9212.3	32	384.9	24	42.6	23	1012.8	27	113.5	26	5.8	19
TROLL-BOTTOM	842.5	81	56.8	81	3.5	81	113.5	81	7.1	81	1.6	88
SPEARING	2362.3	48	86.7	47	13.9	48	412.0	49	65.7	49	5.8	44
TOTAL:	12417.1	29	528.3	26	60.0	24	1538.3	27	186.3	27	6.2	9

Table II.3.9

TUTUILA SEPTEMBER 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	18445.9	24	491.6	22	64.9	20	1244.9	26	161.1	23	8.8	0
BOTTOM FISH	502.7	84	60.8	84	4.1	84	121.6	84	8.1	84	2.1	136
TROLL-BOTTOM	1945.9	84	56.8	84	4.1	84	283.8	84	20.3	84	3.4	84
SPEARING	3932.4	44	129.7	43	20.3	42	541.2	42	85.1	41	5.2	35
TOTAL:	24827.0	25	738.9	25	93.2	23	2191.6	31	274.7	29	7.5	0

* Not enough data to properly compute Coefficient of Variation (CV).

II.33

Table II.3.10

TUTUILA OCTOBER 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	12488.5	28	472.7	23	66.4	23	1244.8	24	174.9	23	27.8	26
TROLL-BOTTOM	317.8	82	48.9	82	4.9	82	97.8	82	9.8	82	6.5	0*
SPEARING	5852.1	66	219.6	54	40.1	53	1075.7	55	195.6	55	18.8	57*
TOTAL:	18658.4	24	741.1	21	106.5	21	2418.4	25	360.7	28	27.2	18

Table II.3.11

TUTUILA NOVEMBER 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	15444.5	35	489.8	25	68.7	26	1550.6	23	215.1	24	11.0	28
TROLL-BOTTOM	3315.9	49	227.6	64	17.1	56	606.6	61	51.3	53	16.6	112*
SPEARING	3432.4	31	276.4	45	34.1	40	820.1	41	101.2	37	9.7	135*
TOTAL:	22192.9	31	993.7	24	105.3	23	2977.3	23	338.3	23	8.8	19

Table II.3.12

TUTUILA DECEMBER 1987 OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	18542.1	25	501.3	19	71.4	18	1668.7	20	238.1	19	25.3	34
BOTTOM FISH	1734.1	57	85.8	56	9.1	59	318.3	55	33.2	58	19.8	0*
TROLL-BOTTOM	489.5	50	48.6	46	6.1	46	145.9	46	18.2	46	6.7	71*
SPEARING	3332.8	34	174.1	35	25.1	32	736.8	33	111.2	32	13.9	128*
TOTAL:	24098.6	22	809.9	23	108.0	21	2869.8	23	390.0	23	22.1	27

* Not enough data to properly compute Coefficient of Variation (CV).

Table II.4.1

TUTUILA JANUARY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	496.9	1.59	BOTTOM FISH	7021.7	22.51
TWINSPO/RED SNAPPER	87.0	0.28	HUMPBAC SNAPPER	23.5	0.08
LEHI (SILVERJAW)	29.3	0.09	EHU (RED SNAPPER)	222.1	0.71
REEF FISH	366.5	1.18	DOLPHIN (MAHIMAH)	184.2	0.59
WAHOO	154.4	0.50	SKIPJACK TUNA	18333.0	58.78
DOGTOTH TUNA	118.0	0.38	YELLOWFIN TUNA	4003.8	12.84
SPINY LOBSTER	146.6	0.47			
TOTAL ALL SPECIES:	31186.9	100.00			

Table II.4.2

TUTUILA FEBRUARY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	221.2	1.41	BOTTOM FISH	3207.9	20.39
DOLPHIN (MAHIMAH)	159.8	1.02	WAHOO	233.5	1.48
SKIPJACK TUNA	10291.5	65.41	DOGTOTH TUNA	44.0	0.28
YELLOWFIN TUNA	1570.8	9.98	KAWAKAWA	6.1	0.04
TOTAL ALL SPECIES:	15734.8	100.00			

Table II.4.3

TUTUILA MARCH 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	595.7	3.59	BOTTOM FISH	4875.6	29.40
YELLOW OPAKAPAKA	39.2	0.24	GINDAI (FLOWER SNAP)	27.6	0.17
LEHI (SILVERJAW)	30.5	0.18	ONAGA (RED SANPPER)	127.8	0.77
EHU (RED SNAPPER)	18.9	0.11	BLUE MARLIN	232.4	1.40
WAHOO	286.5	1.73	SKIPJACK TUNA	7884.1	47.55
YELLOWFIN TUNA	2463.9	14.86			
TOTAL ALL SPECIES:	16582.2	100.00			

Table II.4.4

TUTUILA APRIL 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
BOTTOM FISH	2982.0	36.30	YELLOW OPAKAPAKA	11.7	0.14
GINDAI (FLOWER SNAP)	9.4	0.11	EHU (RED SNAPPER)	11.7	0.14
REEF FISH	1200.0	14.61	DOLPHIN (MAHIMAHI)	21.5	0.26
WAHOO	156.7	1.91	SKIPJACK TUNA	2878.2	35.04
YELLOWFIN TUNA	943.1	11.48			
TOTAL ALL SPECIES:	8214.3	100.00			

Table II.4.5

TUTUILA MAY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	301.6	2.81	BOTTOM FISH	891.0	8.30
REEF FISH	4332.6	40.38	DOLPHIN (MAHIMAHI)	387.8	3.61
SAILFISH	474.0	4.42	WAHOO	229.8	2.14
SKIPJACK TUNA	3024.3	28.19	YELLOWFIN TUNA	652.1	6.08
SPINY LOBSTER	436.3	4.07			
TOTAL ALL SPECIES:	10729.3	100.00			

II.36

Table II.4.6

TUTUILA JUNE 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	1031.6	4.03	BOTTOM FISH	3387.5	13.23
REEF FISH	6461.9	25.23	DOLPHIN (MAHIMAH)	695.2	2.71
SAILFISH	682.5	2.67	WAHOO	111.1	0.43
SKIPJACK TUNA	10206.1	39.86	DOGTUOTH TUNA	82.8	0.32
YELLOWFIN TUNA	2447.4	9.56	SPINY LOBSTER	501.1	1.96
TOTAL ALL SPECIES:	25607.1	100.00			

Table II.4.7

TUTUILA JULY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	422.1	3.17	BOTTOM FISH	1705.2	12.81
REEF FISH	4619.7	34.70	DOLPHIN (MAHIMAH)	110.2	0.83
SKIPJACK TUNA	5459.2	41.00	YELLOWFIN TUNA	906.2	6.81
SPINY LOBSTER	92.0	0.69			
TOTAL ALL SPECIES:	13314.6	100.00			

Table II.4.8

TUTUILA AUGUST 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
BOTTOM FISH	182.7	1.47	REEF FISH	2226.8	17.93
DOLPHIN (MAHIMAH)	972.1	7.83	SKIPJACK TUNA	7853.4	63.25
YELLOWFIN TUNA	1046.6	8.43	SPINY LOBSTER	135.5	1.09
TOTAL ALL SPECIES:	12417.1	100.00			

Table II.4.9

TUTUILA SEPTEMBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
BARRACUDAS	58.5	0.24	SHARKS	1949.5	7.85
BOTTOM FISH	827.0	3.33	REEF FISH	3790.5	15.27
DOLPHIN (MAHIMAHI)	214.4	0.86	SKIPJACK TUNA	13191.4	53.13
DOGTUOTH TUNA	162.2	0.65	YELLOWFIN TUNA	4491.6	18.09
SPINY LOBSTER	141.9	0.57			
TOTAL ALL SPECIES:	24827.0	100.00			

Table II.4.10

TUTUILA OCTOBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
BLACK JACK	34.2	0.18	BARRACUDAS	100.7	0.54
SHARKS	419.5	2.25	BLUE LINED SNAPPER	97.8	0.52
LEHI (SILVERJAW)	19.6	0.10	ONAGA (RED SNAPPER)	63.6	0.34
AMBON EMPEROR	68.5	0.37	REEF FISH	1498.8	8.03
LINED SURGEON	1062.8	5.70	YELLOW EYED SURGEON	115.8	0.62
CONVICT TANG	68.1	0.37	UNICORNFISH (MISC)	204.4	1.10
SQUIRRELFISH	340.6	1.83	PARROTFISH	749.4	4.02
WRASSE	136.3	0.73	DOLPHIN (MAHIMAHI)	234.9	1.26
RAINBOW RUNNER	109.1	0.58	Wahoo	268.5	1.44
SKIPJACK TUNA	3759.1	20.15	DOGTUOTH TUNA	768.5	4.12
YELLOWFIN TUNA	6842.4	36.67	KAWAKAWA	20.1	0.11
SPINY LOBSTER	1675.9	8.98			
TOTAL ALL SPECIES:	18658.4	100.00			

Table II.4.11

TUTUILA NOVEMBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
JACKS	44.8	0.20	BOTTOM FISH	2234.6	10.07
REEF FISH	1439.4	6.49	LINED SURGEON	539.6	2.43
YELLOW EYED SURGEON	147.6	0.67	UNICORNFISH (MISC)	57.0	0.26
UNICORNFISH	166.1	0.75	PARROTFISH	430.0	1.94
DOLPHIN (MAHIMAH)	123.1	0.55	RAINBOW RUNNER	123.1	0.55
WAHOO	123.1	0.55	SKIPJACK TUNA	14031.3	63.22
DOGTUOTH TUNA	44.8	0.20	YELLOWFIN TUNA	2288.0	10.31
KAWAKAWA	138.0	0.62	SPINY LOBSTER	262.3	1.18
TOTAL ALL SPECIES:	22192.9	100.00			

Table II.4.12

TUTUILA DECEMBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
JACKS	107.9	0.45	EELS	46.1	0.19
BOTTOM FISH	1740.0	7.22	TWINSPO/RED SNAPPER	12.1	0.05
ONAGA (RED SNAPPER)	30.2	0.13	REEF FISH	2052.9	8.52
LINED SURGEON	393.3	1.63	YELLOW EYED SURGEON	129.0	0.54
UNICORNFISH (MISC)	46.1	0.19	UNICORNFISH	172.1	0.71
PARROTFISH	333.4	1.38	RAINBOW RUNNER	31.4	0.13
SKIPJACK TUNA	18024.0	74.79	YELLOWFIN TUNA	610.8	2.53
SPINY LOBSTER	369.5	1.53			
TOTAL ALL SPECIES:	24098.6	100.00			

Figure II.5.1

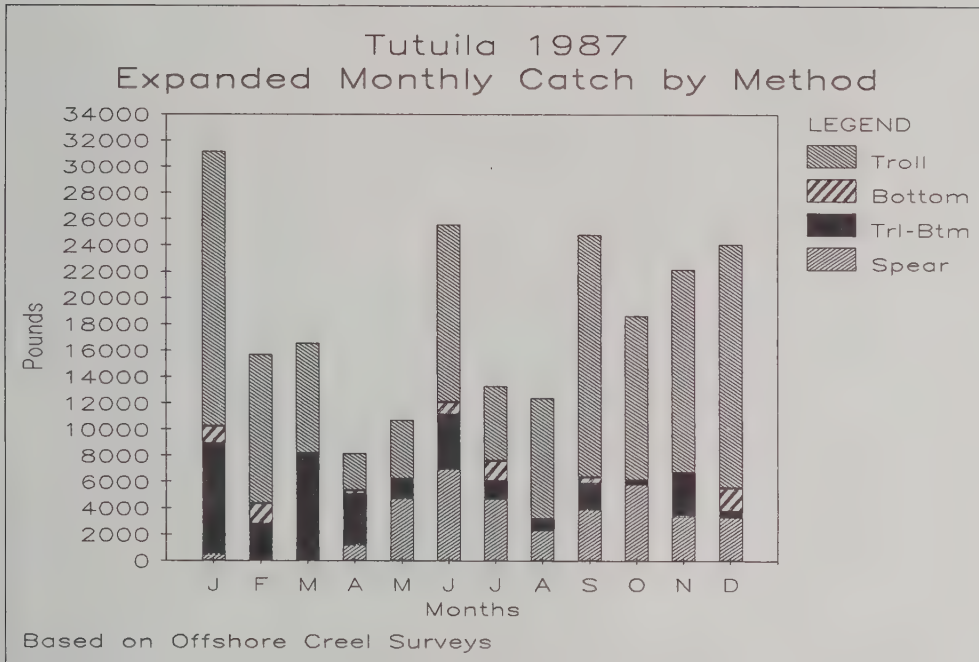
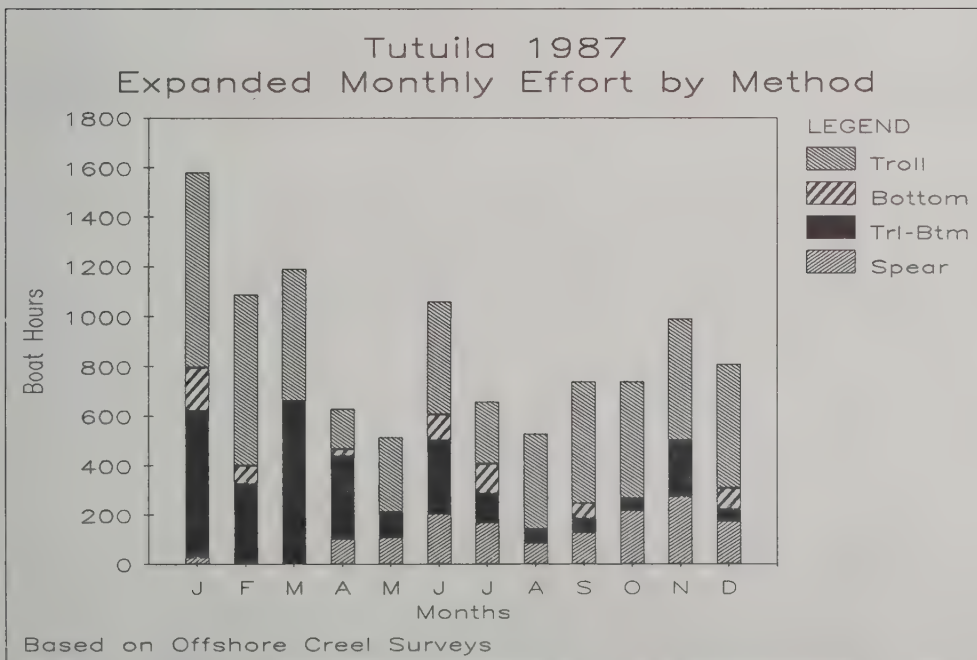


Figure II.5.2





Commonwealth of the Northern Mariana Islands

1987 Fishery Statistics

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
1987 FISHERY STATISTICS

Compiled By

Division of Fish and Wildlife

and the

Western Pacific Fishery Information Network

January 1989

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COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS'
1987 FISHERY STATISTICS

INTRODUCTION

The Commonwealth of the Northern Mariana Islands (CNMI) comprises a string of islands located at about long. 145°E and extending northward from about lat. 14° to 21°N. About 99% of the approximately 21,000 inhabitants of the CNMI live on the three main islands, Saipan (87%), Rota (7%), and Tinian (5%). The Division of Fish and Wildlife (DFW) has been collecting fishery statistics on the commercial fishing fleet of Saipan since the mid-1970's. In 1983, DFW also began collecting information on vessels transshipping tuna out of Tinian. Significant improvements to the data collecting and processing systems were made in 1982 when microcomputer hardware, software, and training were provided by the WPACFIN program. Volumes I and III of this report series provided summary statistics and graphs for 1979-86 data. Volume IV contains similar monthly and annual tables and graphs for 1987, as well as updates to numerous graphs of trends and seasonality based on all 9 years of data, 1979-87.

The major domestic commercial fishery of the CNMI is a small boat, one-day troll fishery. Most of the boats are 12- to 24-foot outboard-powered, runabout-type vessels; however, a few larger boats are also used. In the past few years, there has been a fairly rapid increase in the number of boats in the CNMI, about 70% of which are used in the commercial fisheries. Although trolling is by far the most common fishing method, many boats are also used for bottom fishing and reef fishing activities. Reef fish are an important component of the local diet and are a significant portion of the total commercial catch. Additionally, an increasing amount of reef fish is being imported from other Pacific islands to meet the local demand. In recent years, several larger boats have started fishing more intensively for bottom fish around the islands north of Saipan. The vast majority of the domestic catch is consumed locally, but there have been some exports of fish to Guam and Hawaii.

Beginning in 1983, fishing vessels from several nations began using the Tinian harbor as a port to off-load tuna catches to large transshipment vessels. The DFW began collecting statistics on these activities in February 1983. From 1983 to 1987, transshipments out of Tinian were 53,000, 114,000, 69,000, 73,000, and 58,000 metric tons, respectively. None of the vessels involved in the transshipments is CNMI vessels; however, many of them are U.S. registered purse seiners. The proportion of transshipments made by American vessels has declined steadily from over three-fourths in 1983 to only 43% in 1987. The

III.2

number of U.S. vessels making transshipments has also declined from a high of about 40 in 1984 to about 12-14 in 1986 and about 16 in 1987.

DATA COLLECTING SYSTEM

The principal method used by DFW to collect domestic commercial fisheries data is a dealer invoicing system, sometimes referred to as a "trip ticket" system. The DFW provides numbered two-part invoices to all purchasers of fresh fishery products, including hotels, restaurants, stores, fish markets, and roadside vendors. Dealers complete an invoice each time they purchase fish directly from fishermen. They keep one copy for their records and provide one copy to DFW. Some advantages of this method of data collection are that it is relatively inexpensive to implement and maintain, nearly complete coverage of the commercial fisheries is fairly easy to accomplish, and DFW can provide feedback to dealers and fishermen to ensure data accuracy and continued cooperation. Disadvantages include a dependence on non-DFW personnel to identify the catch and record the data, the types of data that can be collected are somewhat restricted, education and cooperation of all fish purchasers are required, and only the fish that are actually sold to dealers are recorded and a potentially important portion of the total landings is unrecorded. Since 1982, DFW has tried to minimize these disadvantages as much as possible by maintaining a close working relationship with dealers, by educating and adding new dealers to their list as they enter the business, and by implementing a creel survey to help estimate total catch, including recreational and subsistence catch. Data from the creel surveys are not yet available.

The current system collects data from dealers on the island of Saipan, where DFW estimates over 90% of all CNMI commercial landings are made. The DFW further estimates that the proportion of total commercial landings that is recorded in the data base for Saipan since 1983 is over 90%. The percent coverage for 1987 may be lower than in 1986 because of a lag in obtaining data from some new dealers.

Information collected for each commercial purchase of fish from the fishermen includes the following:

- Date
- Buyer's name (dealer)
- Seller's name (fisherman)
- Species
- Weight (pounds)
- Price per pound

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Value
Invoice number

All of these data elements are collected for all purchases of fishery products; however, species identification is frequently made only to a group level, especially for reef fish.

DATA PROCESSING SYSTEM

At the beginning of each month, a DFW employee visits each of the dealers on Saipan to obtain the previous month's invoices, resolve problems, and answer any questions the dealer may have. The invoices are returned to the office for an initial visual edit during the coding process, and are then entered into the "Purchase" data base on the microcomputer. After the records are entered, reports are generated to help verify that all data were entered correctly. On a quarterly basis, copies of the data base are sent to the Honolulu Laboratory, where the data are translated into a different format and transferred to the central computer for additional editing and verification before generation of summary reports. These reports and data bases are then ready for use by qualified WPACFIN participants.

DATA REPORTING SYSTEM

After all editing and quality control activities have been accomplished, monthly and annual summary reports by species are generated. Each of the following reports for 1987 contains information on the pounds, value, average price per pound, and number of recorded landings for each species or species groups. The number of recorded landings ("RECORDS" in the tables) is a measurement of how many times each species was landed, regardless of the number or weight of the fish in the landing. This statistic is provided to give an indication of the frequency each species is reported. The POUNDS can be divided by the RECORDS for the average weight of each landing. Each monthly report contains a subtotal for the sum of all species for that month, and the December report also includes the annual total. Annual reports contain the total landings for each species and the total recorded landings for all species for the calendar year.

The following species, species groups, and abbreviations are used in the tables and graphs of CNMI's data:

I. Pelagic Management Unit Species (PMUS)

Dolphin (mahimahi)
Marlin

III.4

I. PMUS (Cont)

Shortbill spearfish
Sailfish
Wahoo
Sharks

II. Bottomfish Management Unit Species (BMUS)

Jacks (unclassified, but excluding bigeye scad)
Bottom fish (unclassified)
Ehu (red snapper)
Gindai (flower snapper)
Grouper (unclassified)
Kalikali (pink snapper)
Lehi (silverjaw snapper)
Onaga (red or longtail snapper)
Opakapaka (pink snapper)
Uku (gray snapper)
Emperorfish

III. Billfish

Marlin (probably all blue marlin but could also include
the rarely landed striped and black marlin)
Shortbill spearfish
Sailfish

IV. Tunas

Tunas (unclassified)
Skipjack tuna
Yellowfin tuna
Dogtooth tuna

V. Other Tuna

The above tunas excluding skipjack and yellowfin tuna

VI. Fisheries Categories

A. Pelagics

All PMUS and tuna species plus the following:
Troll fish (unclassified)
Barracuda
Rainbow runner

III.5

B. Bottom Fish

Same as BMUS

C. Reef Fish

Reef fish (unclassified)

Giant wrasse

Rabbitfish (hitting, hitting feda, menahac,
and sesjun)

Rudderfish

Squirrelfish

Parrotfish

Snapper

Surgeonfish

Unicornfish

Goatfish

D. Other

Miscellaneous

Bigeye scad

Mullet

Eels

Milkfish

Invertebrates (unclassified)

Crabs (unclassified)

Coconut crab

Lobster

Shrimp

Octopus

Squid

Turtle

Seaweeds

Imported

III.6

Table III.1.1

CNMI 1987 ANNUAL COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
UNKNOWN	5	187.50	308.87	1.65
ASSORTED	44	6087.25	9029.94	1.48
BIGEYE SCAD (ATULAI)	100	9944.21	18440.82	1.85
JACKS	12	485.62	1109.39	2.28
MULLET	5	304.00	501.30	1.65
BOTTOM FISH	151	24742.92	43633.83	1.76
GINDAI (FLOWER SNAP)	4	217.00	469.50	2.16
GROUPE	13	577.00	1055.70	1.83
ONAGA (RED SNAPPER)	12	377.50	1045.07	2.77
OPAKAPAKA (PINK SNP)	19	917.00	2107.21	2.30
REEF FISH	511	65228.30	105645.49	1.62
RABBITFISH (HITTING)	98	3248.83	6442.50	1.98
RABBITFISH (MENAHA)	4	392.90	583.39	1.48
RUDDERFISH (GUILLI)	8	235.75	433.70	1.84
EMPEROR (MAFUTE)	82	12454.75	22447.21	1.80
SQUIRRELFISH	10	317.00	533.20	1.68
PARROTFISH	24	3104.25	5133.16	1.65
SURGEONFISH	47	6404.00	9988.65	1.56
UNICORNFISH	10	481.25	798.18	1.66
GOATFISH	20	517.53	909.54	1.76
TROLL FISH	2	361.00	361.00	1.00
BARRACUDA	3	135.00	137.85	1.02
DOLPHIN (MAHIMAHI)	120	7601.87	9955.72	1.31
MARLIN	14	1968.00	2230.80	1.13
SAILFISH	1	67.00	107.20	1.60
RAINBOW RUNNER	9	526.00	683.75	1.30
WAHOO	112	10722.85	13581.55	1.27
SKIPJACK TUNA	819	129203.07	145197.75	1.12
DOGTUOTH TUNA	63	5106.99	6457.57	1.26
YELLOWFIN TUNA	113	8362.85	11436.70	1.37
INVERTEBRATES	1	24.00	57.60	2.40
LOBSTER	176	5008.96	15612.19	3.12
OCTOPUS	70	2226.84	3335.05	1.50
SHRIMP (SALTWATER)	1	4.00	8.00	2.00
SQUID	2	26.00	52.00	2.00
IMPORTED	21	5040.00	8578.45	1.70
** TOTAL **	2706	312608.99	448409.83	

III.7

Table III.1.2

CNMI JANUARY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES -----	RECORDS -----	POUNDS -----	VALUE -----	\$/LB -----
ASSORTED	2	51.50	99.50	1.93
BIGEYE SCAD (ATULAI)	4	568.56	944.07	1.66
JACKS	2	74.00	148.00	2.00
BOTTOM FISH	8	583.00	1037.50	1.78
GINDAI (FLOWER SNAP)	1	40.00	100.00	2.50
GROUPE	1	40.00	70.00	1.75
ONAGA (RED SNAPPER)	1	20.00	38.00	1.90
OPAKAPAKA (PINK SNP)	5	173.00	367.40	2.12
REEF FISH	60	6679.39	10889.20	1.63
RABBITFISH (HITTING)	10	207.58	375.51	1.81
EMPEROR (MAFUTE)	17	4161.25	7287.78	1.75
SURGEONFISH	3	237.00	366.25	1.55
GOATFISH	1	20.00	35.00	1.75
BARRACUDA	1	36.00	48.60	1.35
DOLPHIN (MAHIMAHI)	16	1174.25	1612.57	1.37
MARLIN	1	89.00	97.90	1.10
SAILFISH	1	67.00	107.20	1.60
RAINBOW RUNNER	1	44.00	66.00	1.50
WAHOO	17	2745.00	3417.60	1.25
SKIPJACK TUNA	65	9733.00	10947.97	1.12
DOGTUOTH TUNA	4	334.00	428.40	1.28
YELLOWFIN TUNA	28	2563.14	3614.04	1.41
INVERTEBRATES	1	24.00	57.60	2.40
LOBSTER	12	50.80	157.71	3.10
OCTOPUS	6	76.47	163.63	2.14
 ** SUBTOTAL **	 268	 29791.94	 42477.43	

Table III.1.3

CNMI FEBRUARY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	5	637.00	1154.50	1.81
BIGEYE SCAD (ATULAI)	9	1113.00	2538.45	2.28
JACKS	2	209.25	499.63	2.39
BOTTOM FISH	23	5042.00	9191.70	1.82
GINDAI (FLOWER SNAP)	1	22.00	49.50	2.25
GROUPE	1	62.00	124.00	2.00
ONAGA (RED SNAPPER)	2	50.00	104.50	2.09
OPAKAPAKA (PINK SNP)	3	217.50	629.35	2.89
REEF FISH	45	6435.62	10539.79	1.64
RABBITFISH (HITTING)	3	41.00	82.00	2.00
RUDDERFISH (GUILLI)	1	20.00	36.00	1.80
EMPEROR (MAFUTE)	7	407.50	767.50	1.88
SQUIRRELFISH	3	93.00	146.45	1.57
PARROTFISH	1	30.00	52.50	1.75
SURGEONFISH	3	268.00	421.00	1.57
UNICORNFISH	1	45.25	67.88	1.50
GOATFISH	1	35.00	61.25	1.75
DOLPHIN (MAHIMAHI)	26	1826.89	2253.42	1.23
RAINBOW RUNNER	1	60.00	66.00	1.10
WAHOO	6	648.75	674.99	1.04
SKIPJACK TUNA	32	2375.31	2807.30	1.18
DOGTUOTH TUNA	7	448.00	513.00	1.15
YELLOWFIN TUNA	9	483.00	648.77	1.34
LOBSTER	15	86.50	242.00	2.80
OCTOPUS	1	20.25	30.38	1.50
SQUID	1	22.00	44.00	2.00
IMPORTED	12	2936.00	4955.50	1.69
 ** SUBTOTAL **	 221	 23634.82	 38701.36	

III.9

Table III.1.4

CNMI MARCH 1987 COMMERCIAL LANDINGS FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	2	288.25	497.38	1.73
BIGEYE SCAD (ATULAI)	10	944.00	2196.85	2.33
JACKS	4	84.89	212.23	2.50
BOTTOM FISH	16	3256.75	5740.05	1.76
GINDAI (FLOWER SNAP)	1	65.00	162.50	2.50
GROUPER	2	123.00	331.45	2.69
ONAGA (RED SNAPPER)	2	113.00	321.45	2.84
OPAKAPAKA (PINK SNP)	2	33.00	68.50	2.08
REEF FISH	18	3110.25	5194.95	1.67
RABBITFISH (HITTING)	7	171.50	389.13	2.27
RUDDERFISH (GUILLI)	1	46.00	82.80	1.80
EMPEROR (MAFUTE)	9	1583.75	3017.01	1.90
SQUIRRELFISH	1	63.00	110.25	1.75
SURGEONFISH	3	229.00	377.90	1.65
GOATFISH	3	71.50	127.25	1.78
BARRACUDA	1	25.00	33.75	1.35
DOLPHIN (MAHIMAHI)	23	1152.65	1433.77	1.24
RAINBOW RUNNER	3	190.00	196.60	1.03
WAHOO	16	1306.90	1706.80	1.31
SKIPJACK TUNA	18	2404.25	2711.13	1.13
DOGTOTH TUNA	9	778.25	1043.00	1.34
YELLOWFIN TUNA	6	360.75	519.03	1.44
LOBSTER	4	72.75	212.25	2.92
OCTOPUS	2	119.00	187.00	1.57
 ** SUBTOTAL **	 163	 16592.44	 26873.03	

Table III.1.5

CNMI APRIL 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	4	372.00	433.00	1.16
BIGEYE SCAD (ATULAI)	10	740.00	1208.45	1.63
JACKS	4	117.48	249.53	2.12
BOTTOM FISH	15	3958.00	7080.63	1.79
GROUPE	1	32.00	56.00	1.75
ONAGA (RED SNAPPER)	1	30.00	60.00	2.00
OPAKAPAKA (PINK SNP)	1	35.00	70.00	2.00
REEF FISH	30	4004.75	6508.98	1.63
RABBITFISH (HITTING)	7	280.50	581.00	2.07
RUDDERFISH (GUILLI)	1	27.00	49.95	1.85
EMPEROR (MAFUTE)	5	1077.50	1956.30	1.82
SQUIRRELFISH	1	36.00	63.00	1.75
PARROTFISH	4	428.25	783.73	1.83
SURGEONFISH	2	150.00	245.65	1.64
UNICORNFISH	1	57.00	102.60	1.80
GOATFISH	2	33.00	59.75	1.81
DOLPHIN (MAHIMAHI)	32	2151.73	2900.65	1.35
RAINBOW RUNNER	1	48.00	100.80	2.10
WAHOO	10	873.20	1058.12	1.21
SKIPJACK TUNA	68	12498.66	14983.43	1.20
DOGTUOTH TUNA	7	799.50	1199.15	1.50
YELLOWFIN TUNA	13	923.69	1290.63	1.40
LOBSTER	12	150.74	494.22	3.28
OCTOPUS	4	73.25	139.63	1.91
IMPORTED	9	2104.00	3622.95	1.72
 ** SUBTOTAL **	 245	 31001.25	 45298.15	

III.11

Table III.1.6

CNMI MAY 1987 COMMERCIAL LANDINGS FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	1	351.00	351.00	1.00
BIGEYE SCAD (ATULAI)	13	1303.59	2439.17	1.87
MULLET	1	70.00	122.50	1.75
BOTTOM FISH	13	1434.00	2412.30	1.68
GROUPE	3	155.00	205.25	1.32
ONAGA (RED SNAPPER)	1	26.00	91.00	3.50
OPAKAPAKA (PINK SNP)	1	24.00	69.60	2.90
REEF FISH	32	4894.68	7920.69	1.62
RABBITFISH (HITTING)	5	157.00	331.85	2.11
RUDDERFISH (GUILLI)	1	30.00	54.00	1.80
EMPEROR (MAFUTE)	3	103.25	202.66	1.96
SQUIRRELFISH	1	25.00	43.75	1.75
PARROTFISH	3	364.00	665.80	1.83
SURGEONFISH	4	410.00	643.75	1.57
UNICORNFISH	1	14.00	24.50	1.75
GOATFISH	1	10.00	22.50	2.25
DOLPHIN (MAHIMAHI)	11	740.56	972.40	1.31
MARLIN	1	84.00	134.40	1.60
WAHOO	9	1405.50	1654.65	1.18
SKIPJACK TUNA	110	23414.16	24266.03	1.04
DOGT0OTH TUNA	10	820.00	850.50	1.04
YELLOWFIN TUNA	3	181.00	283.80	1.57
LOBSTER	16	789.50	2362.50	2.99
OCTOPUS	2	31.00	46.50	1.50
 ** SUBTOTAL **	 246	 36837.24	 46171.10	

Table III.1.7

CNMI JUNE 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	4	580.50	903.63	1.56
BIGEYE SCAD (ATULAI)	7	574.50	1047.48	1.82
MULLET	1	30.00	54.00	1.80
BOTTOM FISH	15	2282.18	3774.71	1.65
GROUPE	1	15.00	26.25	1.75
ONAGA (RED SNAPPER)	2	88.00	262.00	2.98
OPAKAPAKA (PINK SNP)	2	201.50	356.15	1.77
REEF FISH	49	6339.75	10136.20	1.60
RABBITFISH (HITTING)	1	19.00	38.00	2.00
RUDDERFISH (GUILLI)	1	27.00	49.95	1.85
EMPEROR (MAFUTE)	5	445.75	743.80	1.67
SQUIRRELFISH	2	50.00	82.25	1.65
PARROTFISH	1	55.00	96.25	1.75
SURGEONFISH	5	921.00	1401.00	1.52
UNICORNFISH	1	23.00	40.25	1.75
GOATFISH	1	25.00	43.75	1.75
DOLPHIN (MAHIMAHI)	3	141.00	141.00	1.00
MARLIN	4	731.00	748.40	1.02
WAHOO	4	177.00	274.50	1.55
SKIPJACK TUNA	133	20766.34	21610.33	1.04
DOGTOTH TUNA	4	202.66	247.66	1.22
YELLOWFIN TUNA	9	970.00	1224.90	1.26
LOBSTER	31	1655.88	4967.64	3.00
OCTOPUS	11	401.18	651.45	1.62
** SUBTOTAL **	297	36722.24	48921.55	

Table III.1.8

CNMI JULY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
UNKNOWN	5	187.50	308.87	1.65
ASSORTED	5	818.00	1293.65	1.58
BIGEYE SCAD (ATULAI)	3	195.10	327.25	1.68
MULLET	2	62.00	111.80	1.80
BOTTOM FISH	5	437.82	1014.26	2.32
GROUPE	1	29.00	50.75	1.75
OPAKAPAKA (PINK SNP)	1	41.75	118.99	2.85
REEF FISH	62	5444.09	8871.64	1.63
RABBITFISH (HITTING)	8	180.50	350.20	1.94
RABBITFISH (MENAHA)	4	392.90	583.39	1.48
RUDDERFISH (GUILLI)	1	39.00	72.15	1.85
EMPEROR (MAFUTE)	4	272.00	592.41	2.18
SQUIRRELFISH	1	25.00	43.75	1.75
SURGEONFISH	2	360.00	540.00	1.50
GOATFISH	2	60.00	115.50	1.93
MARLIN	1	149.00	149.00	1.00
SKIPJACK TUNA	90	13801.50	15393.13	1.12
DOGTOTH TUNA	3	237.00	352.80	1.49
YELLOWFIN TUNA	11	442.50	593.65	1.34
LOBSTER	23	580.02	1771.81	3.05
OCTOPUS	18	851.56	1111.65	1.31
** SUBTOTAL **	252	24606.24	33766.65	

Table III.1.9

CNMI AUGUST 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
BIGEYE SCAD (ATULAI)	18	2026.00	3497.38	1.73
BOTTOM FISH	9	581.00	1092.30	1.88
GINDAI (FLOWER SNAP)	1	90.00	157.50	1.75
GROUPE	1	20.00	37.00	1.85
ONAGA (RED SNAPPER)	1	18.00	58.50	3.25
OPAKAPAKA (PINK SNP)	2	104.75	222.64	2.13
REEF FISH	54	6595.25	10785.60	1.64
RABBITFISH (HITTING)	11	237.50	473.62	1.99
RUDDERFISH (GUILLI)	1	31.00	57.35	1.85
EMPEROR (MAFUTE)	7	644.00	1125.95	1.75
SQUIRRELFISH	1	25.00	43.75	1.75
PARROTFISH	3	208.00	337.75	1.62
SURGEONFISH	5	594.00	900.15	1.52
GOATFISH	4	162.78	284.86	1.75
MARLIN	2	199.00	263.20	1.32
RAINBOW RUNNER	1	95.00	118.75	1.25
WAHOO	1	18.00	18.00	1.00
SKIPJACK TUNA	79	12044.00	13013.22	1.08
DOGTOTH TUNA	5	534.00	562.75	1.05
YELLOWFIN TUNA	11	1270.50	1692.95	1.33
LOBSTER	24	668.50	2203.50	3.30
OCTOPUS	10	276.50	433.74	1.57
 ** SUBTOTAL **	 251	 26442.78	 37380.46	

Table III.1.10

CNMI SEPTEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	1	413.00	660.80	1.60
BIGEYE SCAD (ATULAI)	6	636.75	1012.97	1.59
MULLET	1	142.00	213.00	1.50
BOTTOM FISH	13	1640.00	2723.70	1.66
REEF FISH	39	6808.75	10926.55	1.60
RABBITFISH (HITTING)	9	560.50	1056.09	1.88
EMPEROR (MAFUTE)	6	1257.75	2226.00	1.77
PARROTFISH	6	825.00	1287.48	1.56
SURGEONFISH	3	629.00	935.75	1.49
UNICORNFISH	2	40.00	64.65	1.62
GOATFISH	2	27.25	42.88	1.57
TROLL FISH	2	361.00	361.00	1.00
RAINBOW RUNNER	1	8.00	6.00	0.75
WAHOO	1	27.00	35.10	1.30
SKIPJACK TUNA	51	6811.00	7621.33	1.12
DOGTOTH TUNA	3	103.50	138.75	1.34
YELLOWFIN TUNA	4	182.00	265.25	1.46
LOBSTER	18	539.25	1717.75	3.19
OCTOPUS	4	214.25	326.62	1.52
SQUID	1	4.00	8.00	2.00
** SUBTOTAL **	173	21230.00	31629.67	

Table III.1.11

CNMI OCTOBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	12	1554.00	1994.78	1.28
BIGEYE SCAD (ATULAI)	17	1537.96	2670.35	1.74
BOTTOM FISH	22	3460.92	5830.46	1.68
GROUPE	2	101.00	155.00	1.53
ONAGA (RED SNAPPER)	2	32.50	109.62	3.37
REEF FISH	54	6514.36	10366.13	1.59
RABBITFISH (HITTING)	13	166.75	333.50	2.00
EMPEROR (MAFUTE)	15	2389.25	4288.26	1.79
PARROTFISH	1	393.00	589.50	1.50
SURGEONFISH	3	545.00	817.50	1.50
UNICORNFISH	1	18.00	29.70	1.65
BARRACUDA	1	74.00	55.50	0.75
DOLPHIN (MAHIMAHI)	2	12.50	16.40	1.31
MARLIN	1	165.00	165.00	1.00
RAINBOW RUNNER	1	81.00	129.60	1.60
WAHOO	24	1718.00	2105.29	1.23
SKIPJACK TUNA	46	5041.75	5870.45	1.16
DOGTOTH TUNA	5	264.50	283.40	1.07
YELLOWFIN TUNA	7	383.25	526.16	1.37
LOBSTER	12	220.82	770.46	3.49
OCTOPUS	8	124.38	185.95	1.50
SHRIMP (SALTWATER)	1	4.00	8.00	2.00
** SUBTOTAL **	250	24801.94	37301.01	

Table III.1.12

CNMI NOVEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	6	665.00	1206.50	1.81
BIGEYE SCAD (ATULAI)	3	304.75	558.40	1.83
BOTTOM FISH	9	793.25	1506.72	1.90
OPAKAPAKA (PINK SNP)	2	86.50	204.58	2.37
REEF FISH	26	4052.50	6545.20	1.62
RABBITFISH (HITTING)	11	663.50	1395.00	2.10
RUDDERFISH (GUILLI)	1	15.75	31.50	2.00
EMPEROR (MAFUTE)	1	26.00	41.60	1.60
PARROTFISH	5	801.00	1320.15	1.65
SURGEONFISH	10	1140.00	1820.05	1.60
UNICORNFISH	1	102.00	168.30	1.65
GOATFISH	2	38.00	60.80	1.60
MARLIN	3	485.00	567.30	1.17
WAHOO	14	1231.00	1867.89	1.52
SKIPJACK TUNA	65	11962.25	14914.83	1.25
DOGTOTH TUNA	5	522.00	736.43	1.41
YELLOWFIN TUNA	1	14.50	19.55	1.35
LOBSTER	5	99.70	428.85	4.30
OCTOPUS	3	36.50	54.75	1.50
 ** SUBTOTAL **	 173	 23039.20	 33448.40	

Table III.1.13

CNMI DECEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
ASSORTED	2	357.00	435.20	1.22
BOTTOM FISH	3	1274.00	2229.50	1.75
REEF FISH	42	4348.91	6960.56	1.60
RABBITFISH (HITTING)	13	563.50	1036.60	1.84
EMPEROR (MAFUTE)	3	86.75	197.94	2.28
SURGEONFISH	4	921.00	1519.65	1.65
UNICORNFISH	2	182.00	300.30	1.65
GOATFISH	1	35.00	56.00	1.60
DOLPHIN (MAHIMAHI)	7	402.29	625.51	1.55
MARLIN	1	66.00	105.60	1.60
WAHOO	10	572.50	768.61	1.34
SKIPJACK TUNA	62	8350.85	11058.60	1.32
DOGTOTH TUNA	1	63.58	101.73	1.60
YELLOWFIN TUNA	11	588.52	757.97	1.29
LOBSTER	4	94.50	283.50	3.00
OCTOPUS	1	2.50	3.75	1.50
** SUBTOTAL **	167	17908.90	26441.02	
** TOTAL **	2706	312608.99	448409.83	

Figure III.1.1

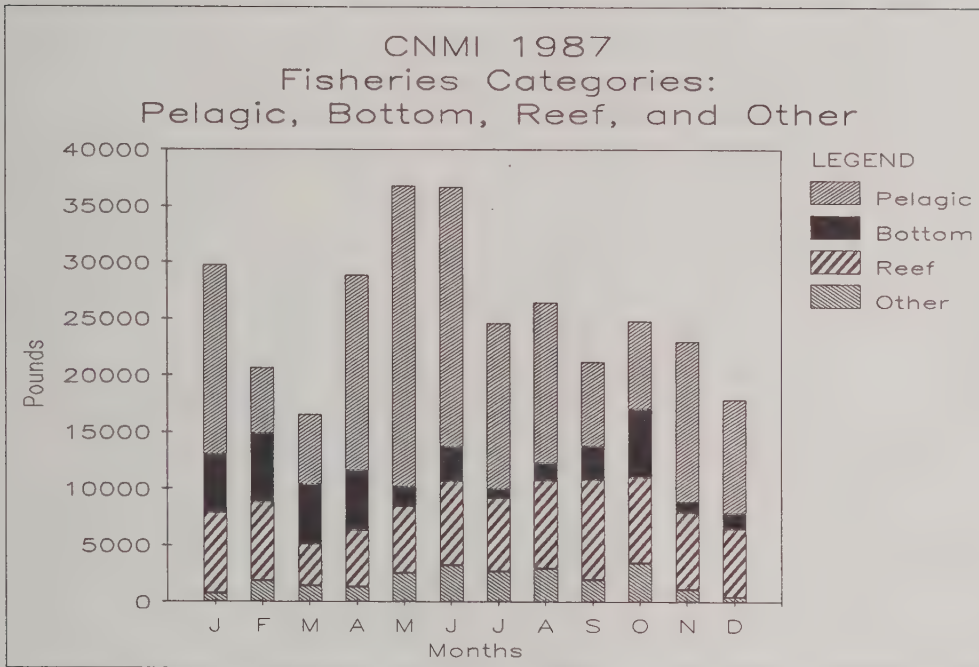


Figure III.1.2

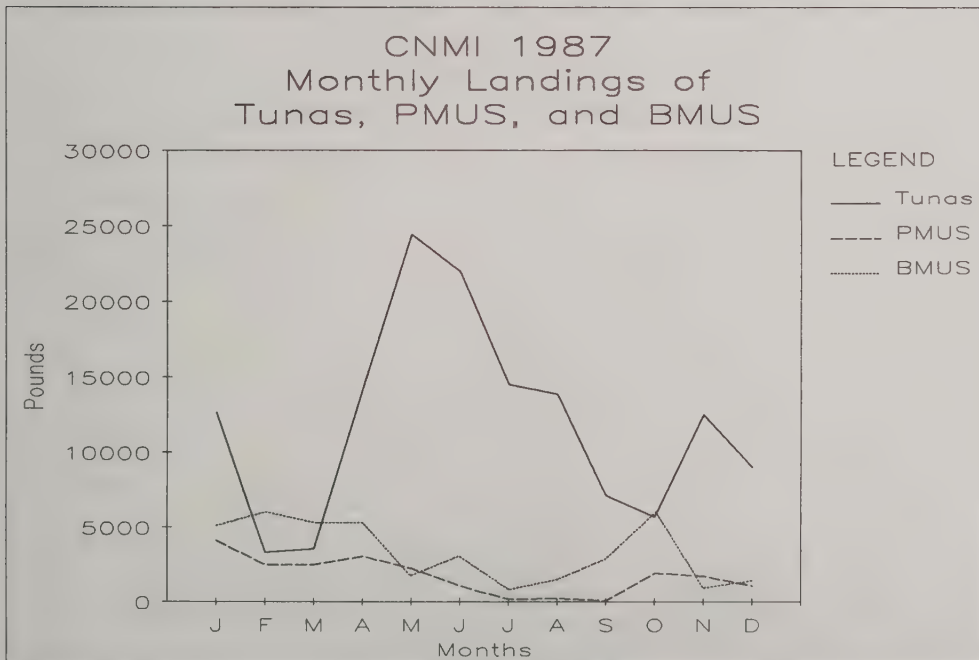


Figure III.1.3

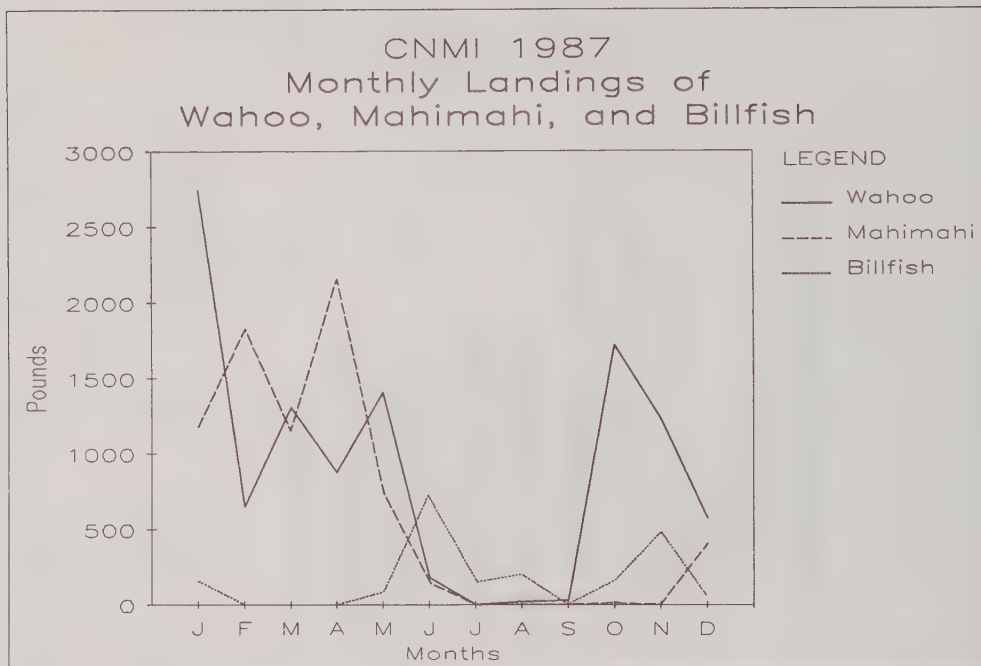


Figure III.1.4

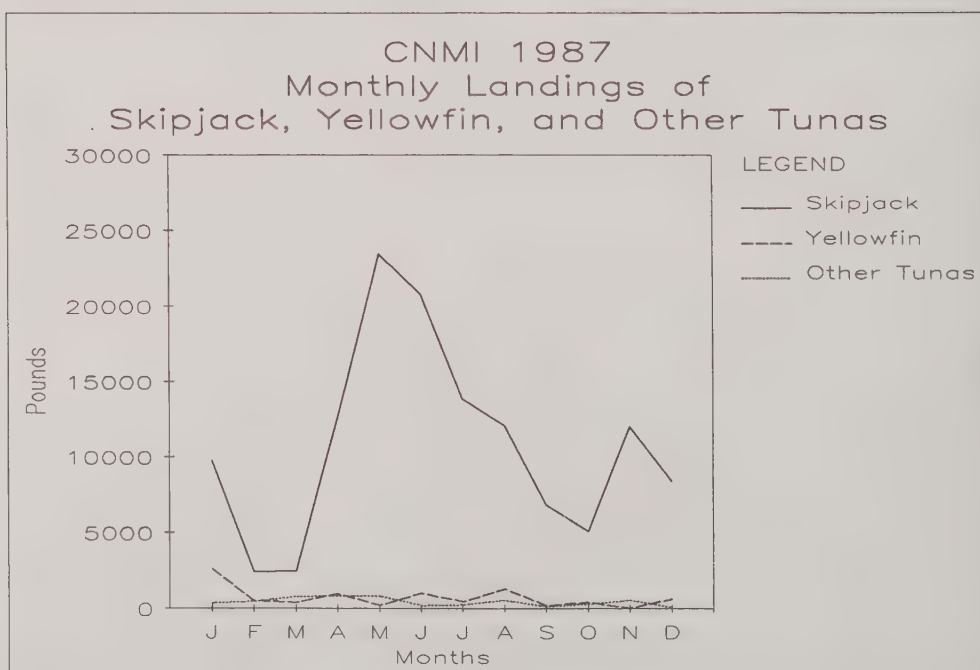


Figure III.2.1

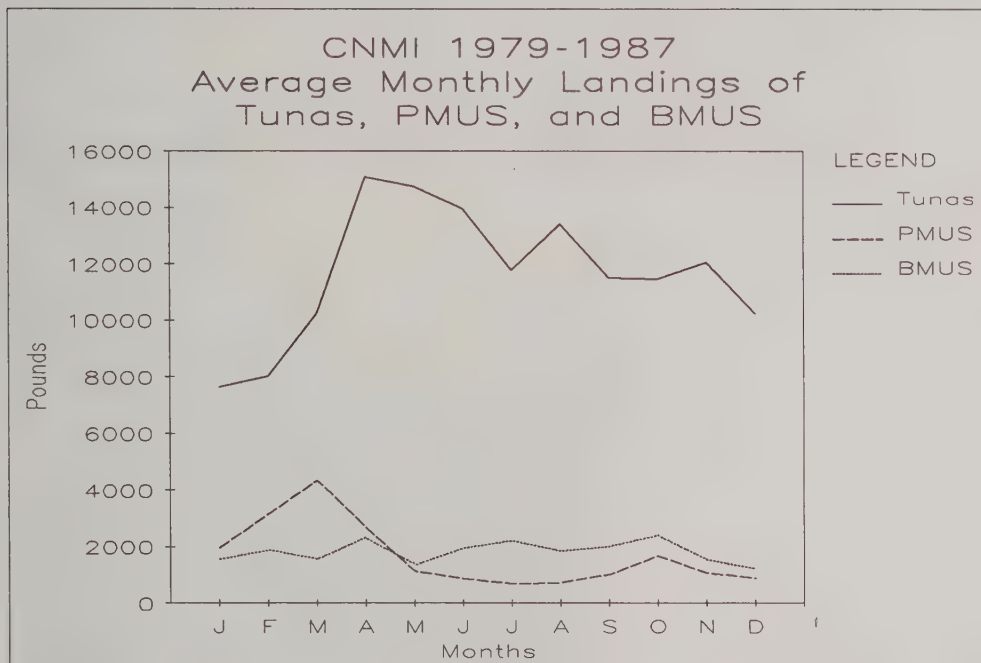


Figure III.2.2

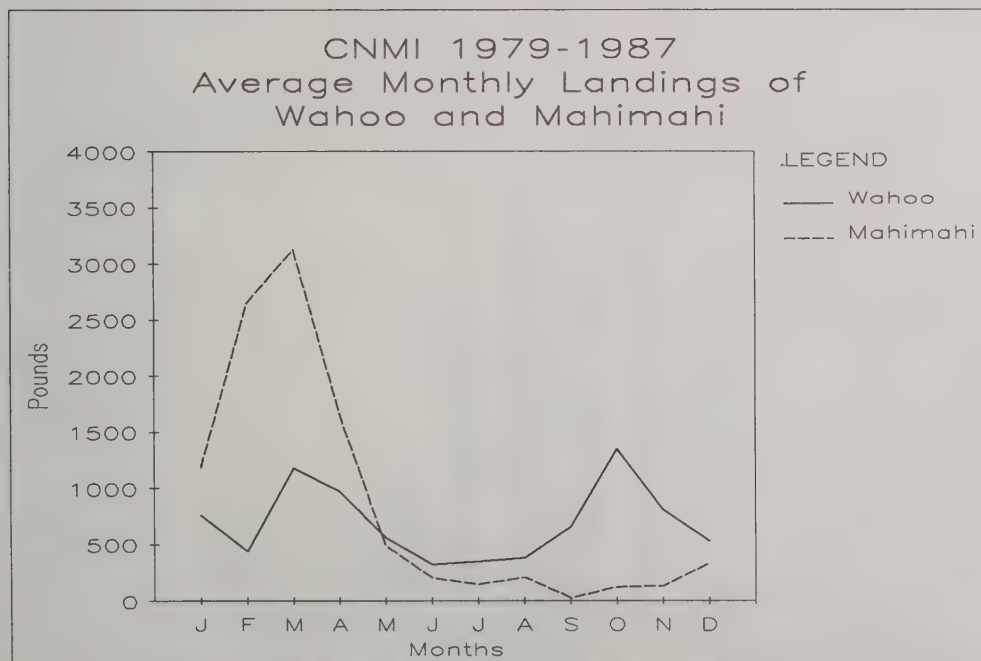


Figure III.2.3

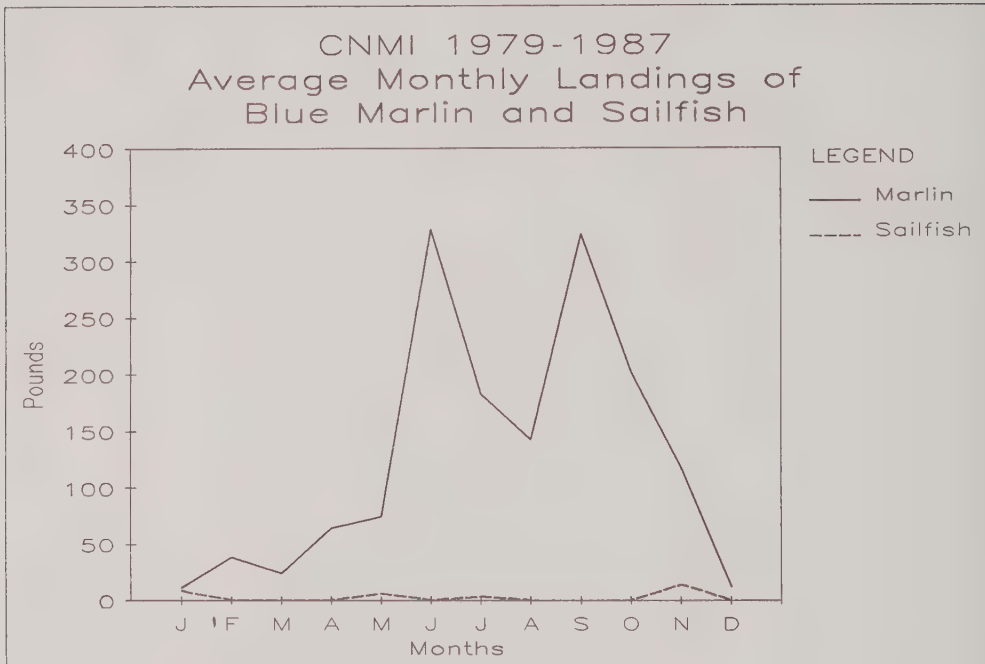


Figure III.2.4

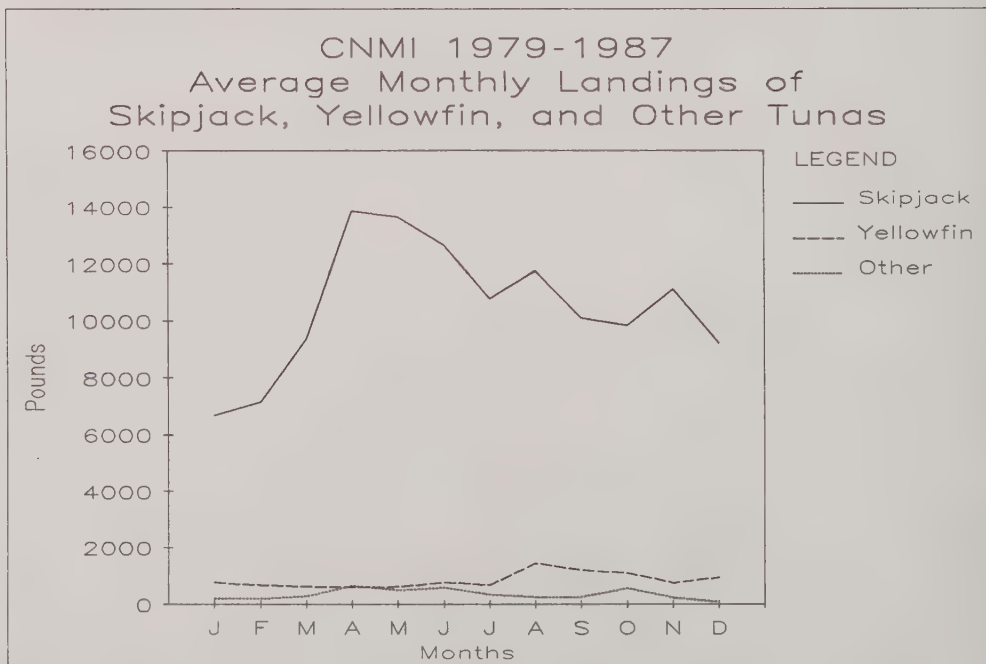


Figure III.2.5

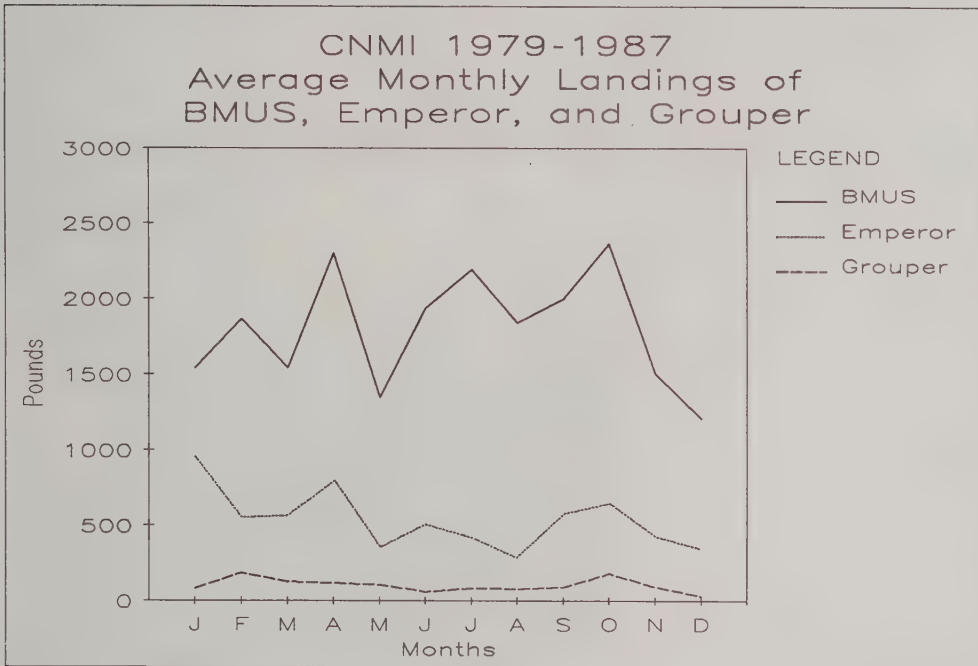


Figure III.3.1

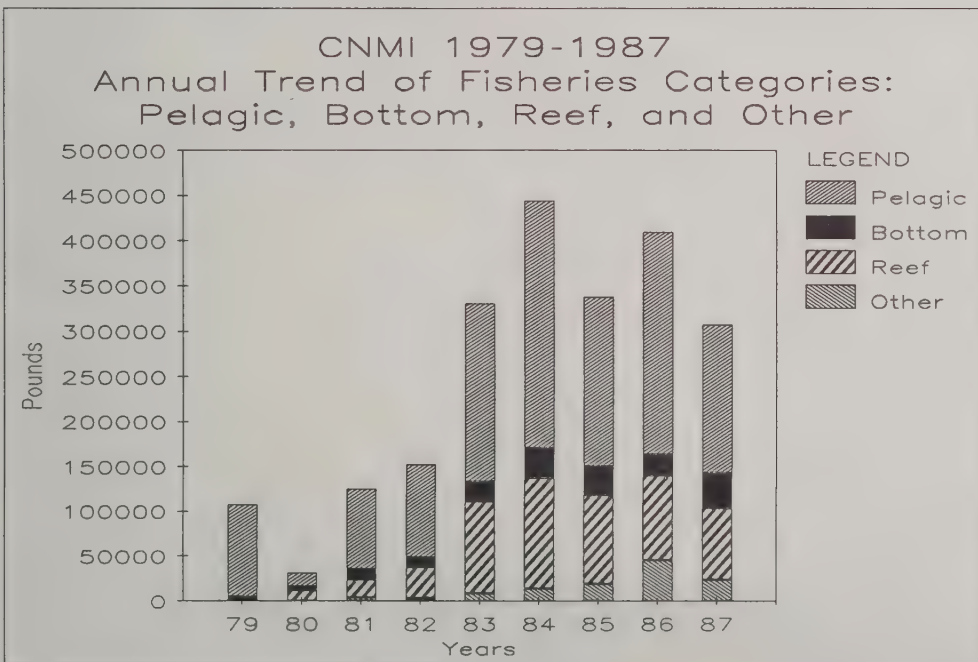


Figure III.3.2

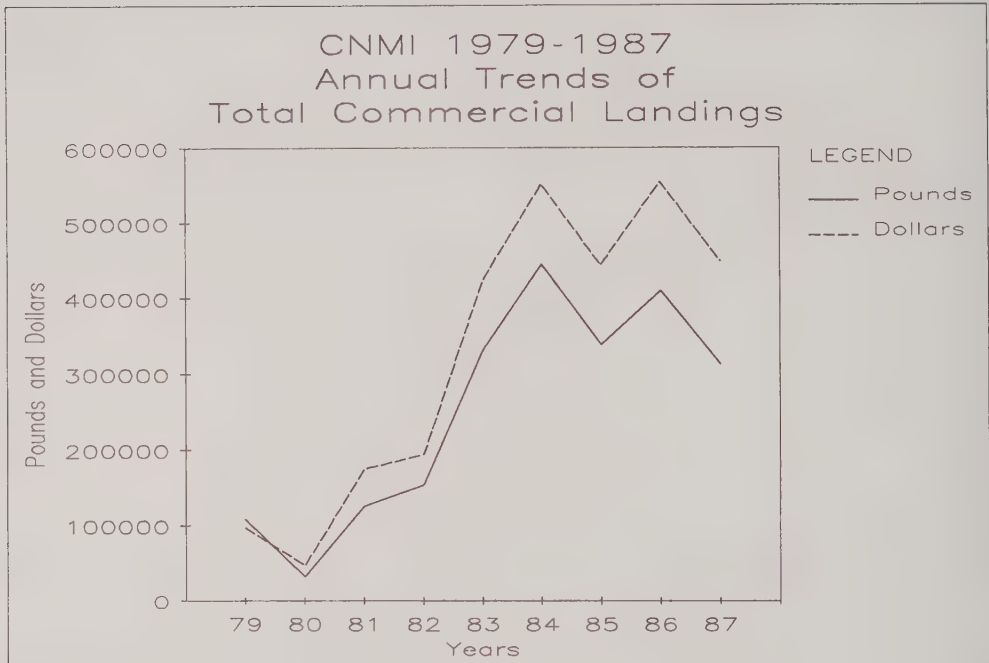


Figure III.3.3

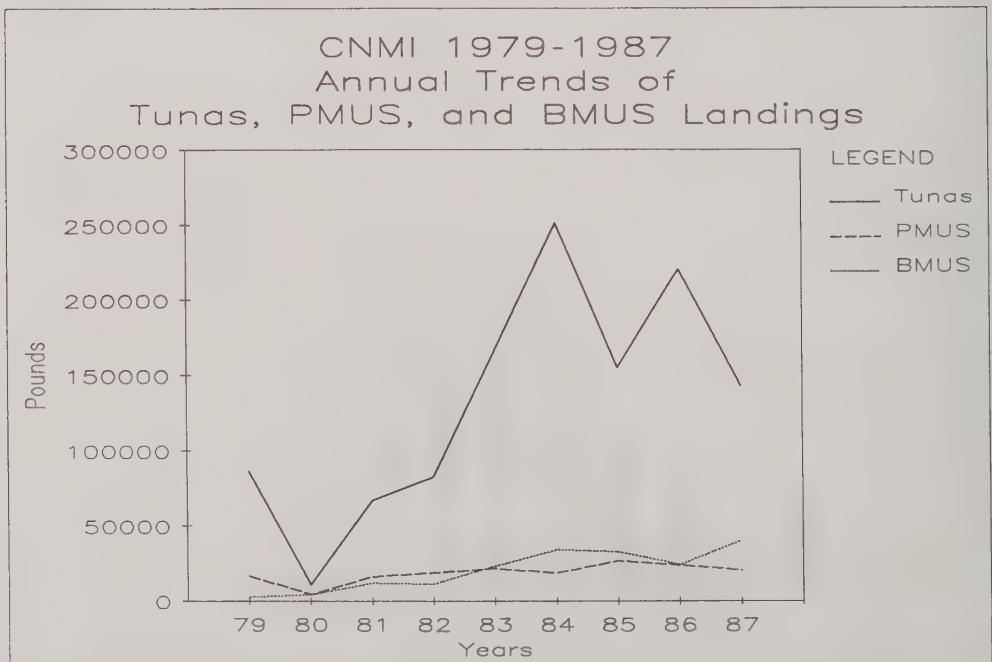


Figure III.3.4

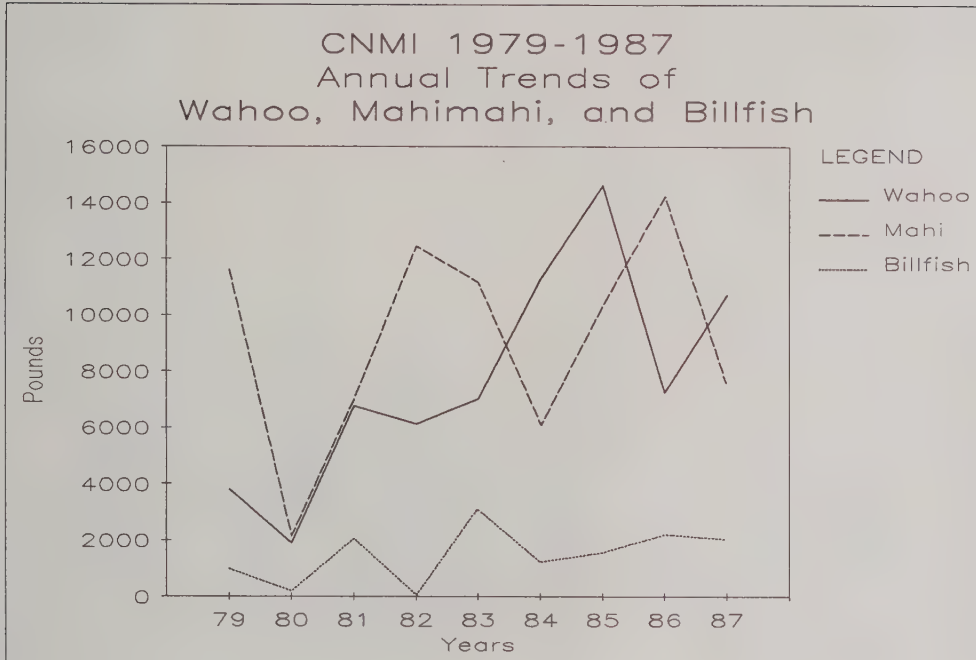


Figure III.3.5

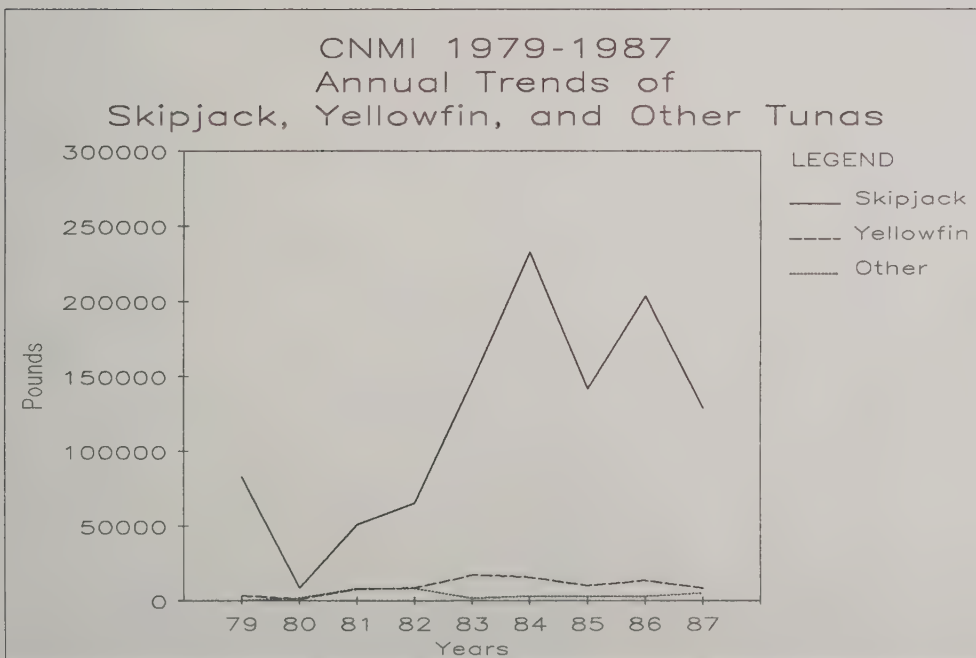


Figure III.4.1

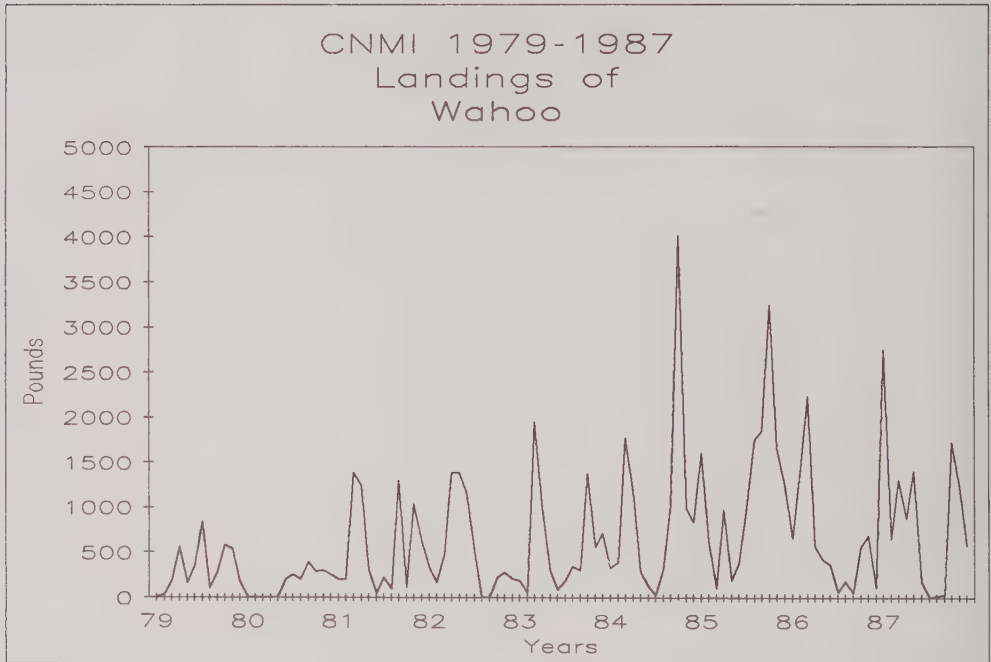


Figure III.4.2

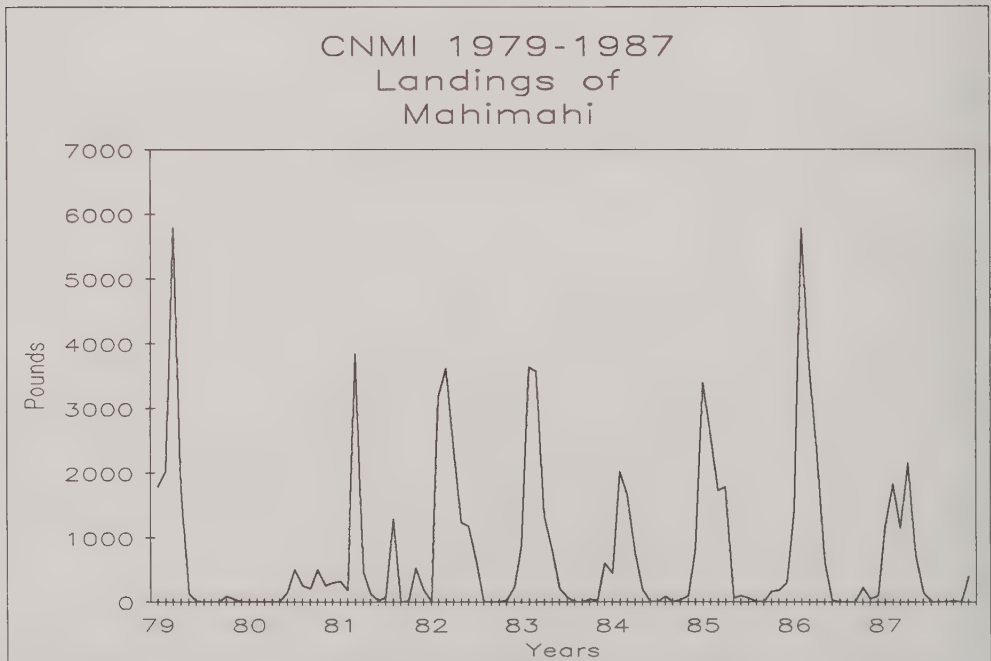


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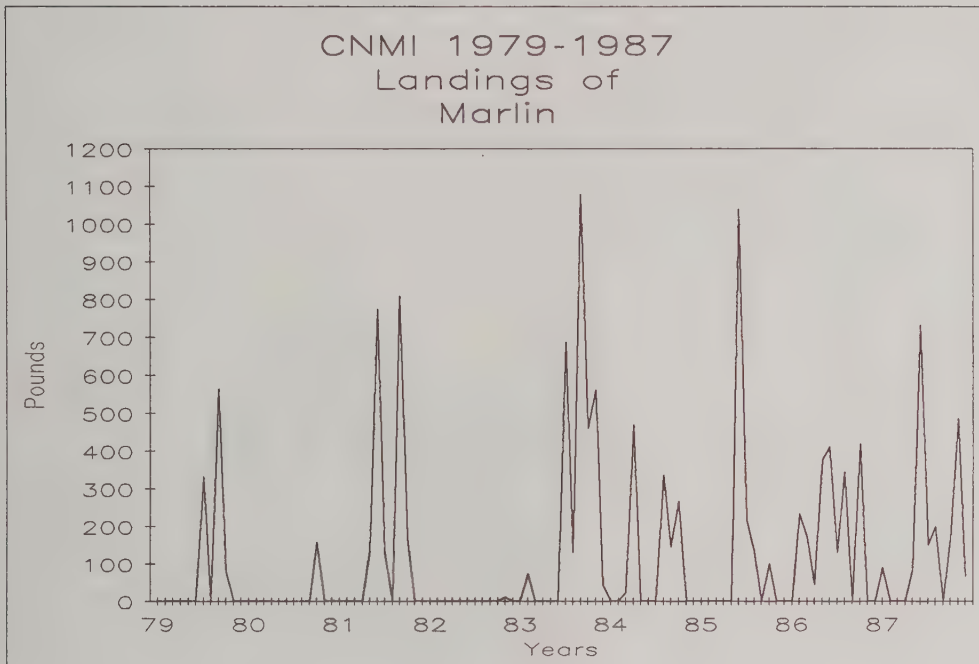


Figure III.4.4

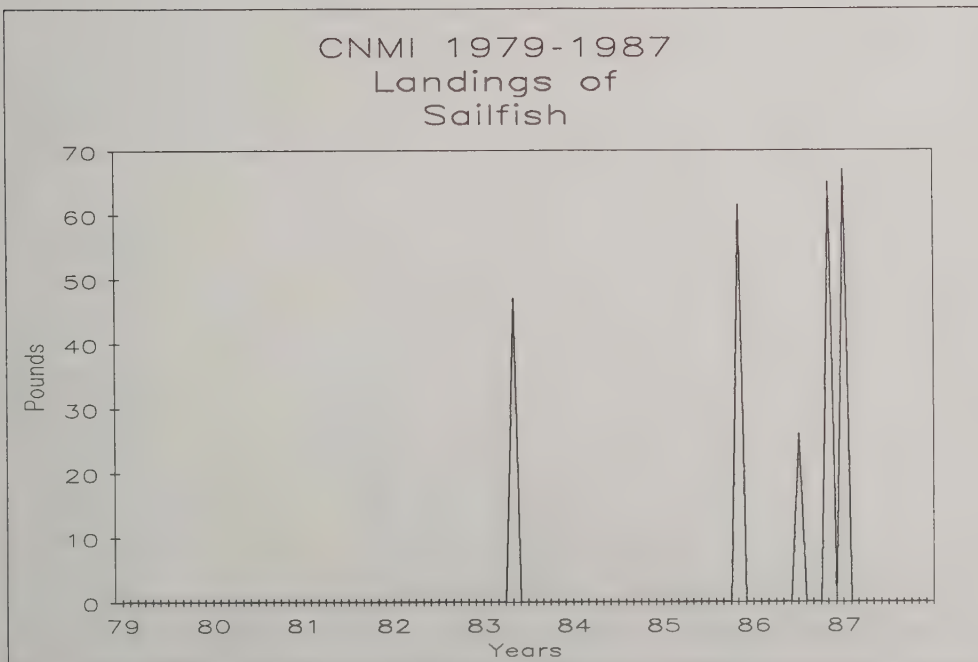


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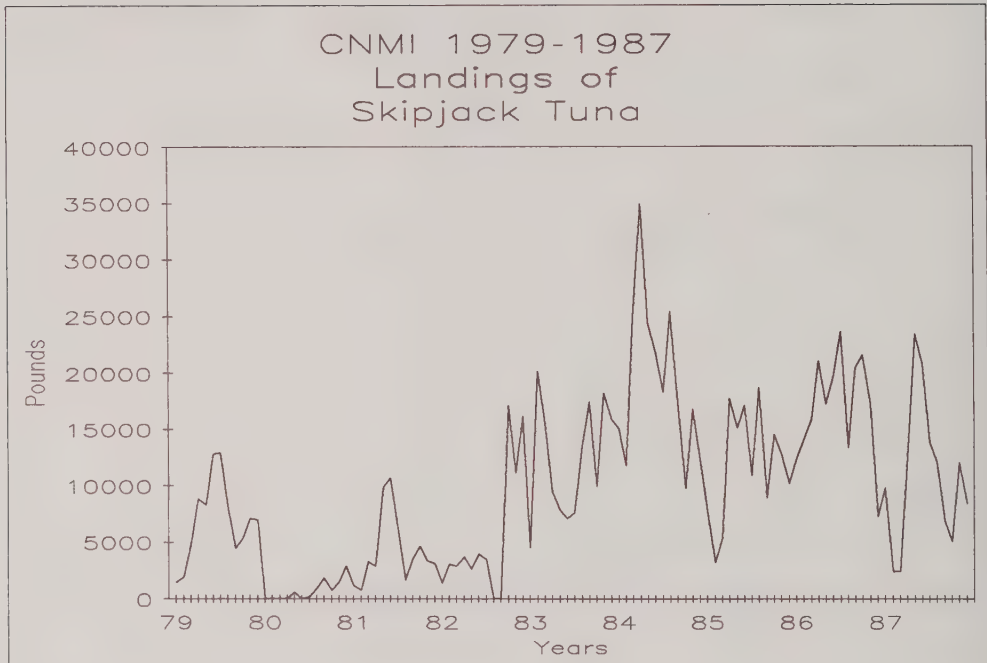


Figure III.4.6

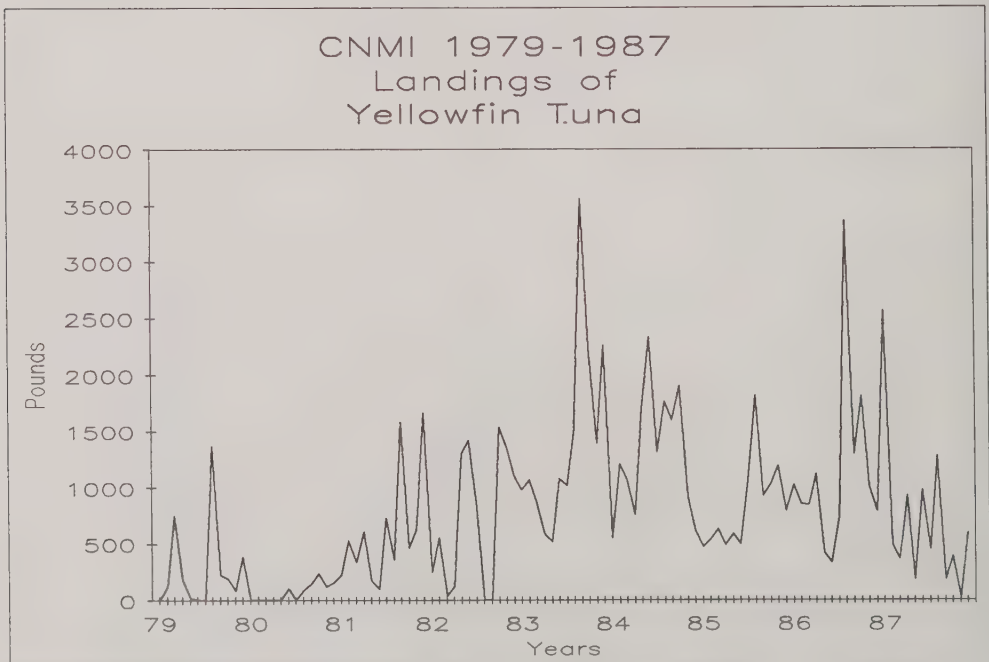


Figure III.4.7

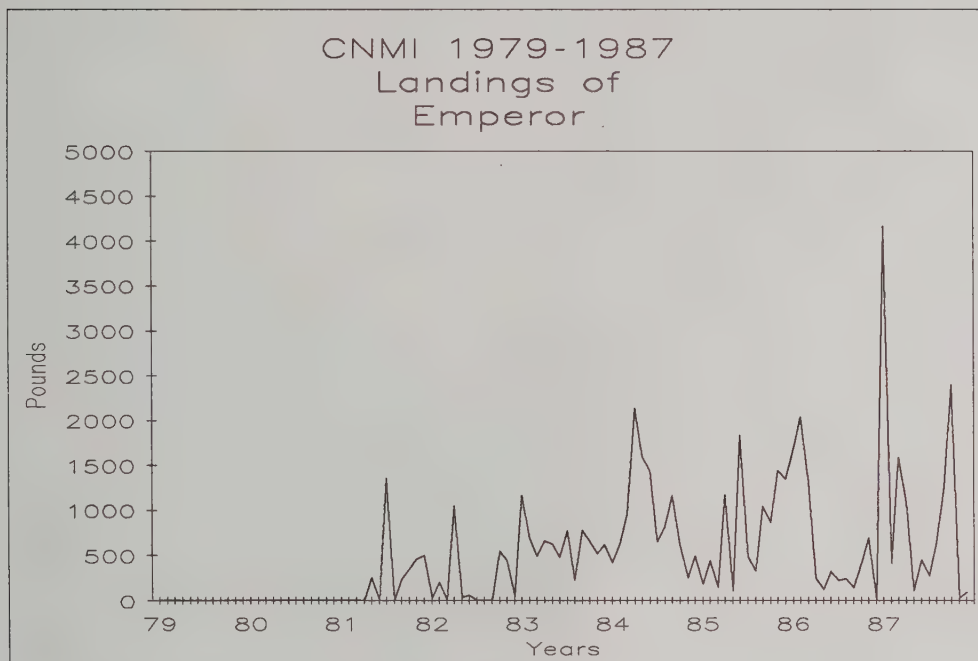
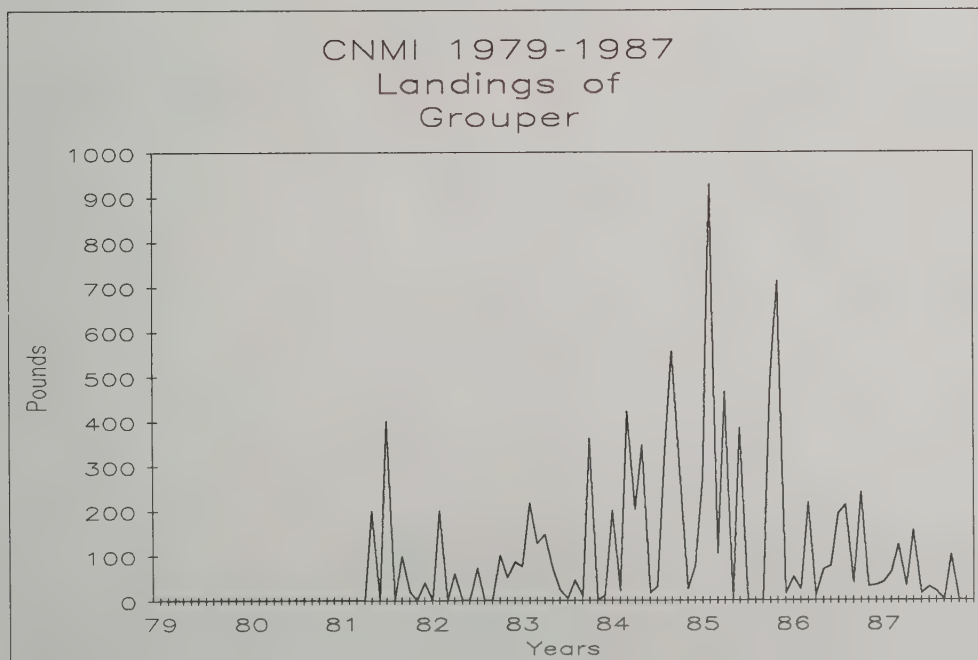


Figure III.4.8





Territory of Guam

1987 Fishery Statistics

GUAM 1987 FISHERY STATISTICS

Compiled By

Guam Division of Aquatic and Wildlife Resources

and the

Western Pacific Fishery Information Network

January 1989

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GUAM 1987 FISHERY STATISTICS

INTRODUCTION

The Territory of Guam (lat. 13.4°N and long. 144.4°E) is the southernmost, largest, and most populous island in the Mariana Archipelago. All of the islands in the chain north of Guam belong to the Commonwealth of the Northern Mariana Islands. Guam is located about 6,000 km (3,700 mi) west-southwest of Honolulu, 2,500 km (1,550 mi) south-southeast of Tokyo, and 2,600 km (1,600 mi) east of Manila. Guam is about 48 km (30 mi) long, varies from 6 to 14 km (4 to 9 mi) wide, and has an estimated land area of 554 km² (214 mi²) and a population of about 120,000.

Fishing activities on Guam can be divided into two basic categories: offshore and inshore fishing. Offshore fishing typically involves small boat (12 to 48 feet), 1 to 2-day trolling and bottom fishing trips that usually originate from one of the three principal harbors located on the west coast and southern tip of the island. Inshore fishing is typically conducted without the use of a boat and consists mostly of nearshore casting, netting, and spearfishing. The Guam Department of Agriculture's Division of Aquatic and Wildlife Resources (DAWR) has been conducting offshore and inshore creel surveys since the early 1970's. Beginning in 1982, DAWR began modifying its data collecting and processing systems to improve estimates of catch and effort by improving sampling techniques and by incorporating the use of microcomputers to expand the survey data. The WPACFIN provided microcomputers and training and worked with DAWR staff and a contractor to redesign the sampling program. In 1982, WPACFIN also began working with local fish wholesalers to obtain information on the commercial landings of Guam. It is from these two sources, DAWR and wholesalers, that the original data for the statistics presented in this report have come.

DATA COLLECTING SYSTEMS

The Guam data collecting systems are divided into two distinctly different systems, one for collecting commercial landings information and one for collecting total landings information through creel surveys.

Commercial Landings

Fish entering the commercial market in Guam come from three sources, full-time commercial fishermen, part-time commercial fishermen, and subsistence or recreational fishermen who

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frequently sell portions of their catch. No licenses are required to sell fish in Guam, nor are there any reporting requirements for those selling fish. Before 1979, there was no central place to sell fish, so fishermen had to develop their own markets and peddle their own fish after each trip. The Guam Fishermen's Coop was established, via some government funding, in Agana in July 1979. The Coop subsequently became the central distribution center for fresh local fish. In 1982, WPACFIN began working with the Coop to improve their invoicing system and obtain data on all fish purchases. A cooperative system was established whereby the Coop would use the forms and coding schemes designed by WPACFIN and would supply copies of all invoices to WPACFIN for entering into computer format. In return, WPACFIN would provide the Coop with document quality control and computer generated summary statistics to help the Coop improve its business. All purchase data back to July 1979 also were coded and computerized.

Two other fish wholesalers began operating in Guam in late 1983, and WPACFIN established similar data collecting and processing arrangements with them. Although these two fish wholesalers eventually left the business, one in 1984 and one in early 1987, it is through the voluntary cooperation of all three wholesalers that reporting on the commercial fisheries of Guam is possible. All tables and figures of commercial landings information included in this report are provided with the consent of these wholesalers. The majority of fresh fish entering the commercial market in Guam during 1987 were purchased by one of the main wholesalers.

Data collected on commercial forms include

- Date
- Fisherman code
- Number of fishermen
- Hours fished
- Area fished
- Species caught
- Number of pieces caught
- Pounds caught
- Price per pound

Creel Surveys

The DAWR has the responsibility to monitor and protect the wildlife and marine resources of Guam. To this end, it began conducting creel surveys in the early 1970's. By systematic, random interviewing of fishermen, DAWR developed a means of estimating total catch and effort by fishing method for the inshore and offshore fisheries. Sampling methodologies were frequently modified in the early years to incorporate new

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information and insights gained during the surveys. Aerial surveys were conducted for several years to help improve estimates of percent coverage. The basic survey methodology was fairly well established by 1979. All data processing was done by hand.

In the 1970's, an annual fishing derby was organized on Guam by groups of local fishermen. This 3-day tournament soon became a highly successful event, with much participation by local recreational and commercial fishermen. The DAWR began collecting census information on the Annual Mariana's Fishing Derby activities as a means of obtaining additional catch and effort information. Although the significance of these data is minor compared to the creel surveys, summaries of derby results are included in this document as a point of interest.

In 1982, WPACFIN hired a contractor to work with DAWR staff to improve the statistical validity of the creel surveys and to establish mathematical algorithms to expand the sample data to estimate total catch and effort with confidence intervals. Consequently, DAWR further improved its sampling methodologies based on the contractor's recommendations, such as adding surveys to better estimate total participation. The WPACFIN developed computer processing systems to automate the data handling and expansion activities. The system design is flexible enough to allow for continued improvements as additional information, insight, and funding are gained. It is essential for the user to understand the basic sampling design and some of the assumptions made for the offshore and inshore surveys to facilitate proper interpretation of the resultant statistics.

The DAWR's fishermen interviews, also called creel surveys, are divided into two separate, major surveys, offshore and inshore. Both are based on a systematic, random sampling of the fisheries; field sampling and interviews are done on a specific number of randomly selected weekdays and weekend-holidays each month. Both surveys are stratified by weekday and weekend-holiday sampling and, during 1987, were conducted on 4 days per month. Both include two subsurveys, one for counting and estimating total participation and one for actually interviewing fishermen for catch and effort information. Both are based on the assumptions that the information given by the fishermen is accurate and the fishermen interviewed are representative of the entire fishing population.

Offshore Creel Survey

Most offshore fishing trips originate from one of three harbors on Guam. Apra Harbor is the largest of these harbors, serves military and commercial shipping activities, and is

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considered one of the best natural harbors in the western Pacific. It ranks third among the harbors as points of origination for offshore fishing trips. Cocos Lagoon on Guam's southern tip is the second largest protected harbor and ranks second as a launching area for offshore fishing trips. The Agana Boat Basin, centrally located on the west coast of Guam in the capitol of Agana, is the smallest of the three harbors but is the busiest launching area for offshore fishing trips. Therefore, DAWR selected the boat basin as the site for interviewing offshore fishermen.

Concurrent with interviewing fishermen returning from trips at the boat basin, a participation survey is conducted to obtain counts of boating activity for the entire island. For estimating total participation for a survey day, unless contrary information is available, a boat is assumed to be fishing if it is "out," as evidenced by its trailer at a boat ramp or being missing from its normal berthing area. A further assumption is made that the fishing activity and success rate of fishermen originating at the Agana Boat Basin are not statistically different from those of fishermen leaving from other areas on the island. The basic premise of the offshore sampling program is that the combined interviews collected on each survey day are sufficient to estimate the average catch and effort for each fishing method used during that day. Therefore, each survey day represents a measurement of the offshore fisheries. Data collected during the participation portion of the offshore creel survey are limited to boat count by launching area, whereas data collected during interviews include the following:

- * Date (year, month, day)
- * Type day (weekday or weekend-holiday)
- * Fishing method
- * Interview time
 - Area fished
 - Boat number
- * Number of fishermen
- * Number of gear units
- * Hours fished per gear
 - Total count for all species combined
 - Type total count
- * Total weight for all species combined
 - Type total weight
 - Total number of species
 - Type total number of species
- # Total count for each species
 - Type count for each species
- # Total weight for each species
 - Type total weight for each species
- # Species name (or species group)
 - Length for an individual fish

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- Type individual length
- Weight for an individual fish
- Type individual weight
- Bait used (up to three different types)
- Wind direction and speed
- Weather conditions
- Cloud cover
- Lunar day
- Percent of catch kept
- Percent of catch sold to the Coop
- Percent of catch sold elsewhere

It is not always possible for the interviewer to obtain information on all items listed. However, those marked with an asterisk (*) are essential to the data expansion process for estimating total catch and effort. Those marked with a pound or number sign (#) are essential to estimating the percent species composition of the catch. The "type" elements (e.g., type individual length) identify the kind of measurements, i.e., either actual, estimated, or calculated.

Inshore Creel Survey

Fielding the inshore creel survey is considerably more complex and troublesome than the offshore survey for several reasons. For instance, fishing activities originate from and occur over a large portion of the coastline, making participation counts and fishermen interviews much more difficult to obtain. Additionally, it is more difficult to obtain interviews for completed fishing trips because the interviewer must survey many miles of coastline where fishermen may quickly terminate their activities at any time. The turnover rate of fishermen during the sampling period is a difficult factor for which to adjust. Tidal stage and moon phase also influence inshore fishing much more than offshore fishing. Nighttime and seasonal pulse fishing are also major considerations for the inshore fisheries. In October 1984, DAWR began additional survey efforts to help quantify the nighttime and seasonal inshore fisheries.

Notwithstanding these complexities and problems, the basic designs of the offshore and inshore surveys are very similar in that they both have participation counts and creel interviews. Two of the significant differences between the offshore and inshore surveys are that the inshore participation counts are made by fishing method as well as by location, and that interview information is combined to form averages of catch and effort for a much larger time period (month, quarter, year) than a single day as in the offshore survey. Therefore, daily measurements of the inshore fisheries are based on island-wide participation counts for a survey day by using averages for the

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catch information based on user-specified, flexible time periods, typically quarterly and annual averages. This modification of the expansion algorithm was required for DAWR to physically complete an inshore survey with limited manpower. Participation counts for essentially the entire island can be obtained during a single sample day, but adequate creel interviews for all methods for the entire island cannot be obtained with the manpower available. Additionally, the surveyable portions of the coastline are divided into three regions to facilitate statistically sound sampling of fishermen. Data for the day and night surveys are processed and expanded separately. Data on the seasonal fisheries for juvenile rabbitfish and bigeye scad are collected at irregular intervals when the fisheries are active. Information collected during the inshore participation surveys includes

- * Date (year, month, day)
- * Type day (weekday or weekend-holiday)
- * Location fished
Time sighted
- * Method used
- * Number of persons
- * Number of gear units
Reef zone fished
Weather and water conditions
Tidal stage

Information collected during the inshore interviews includes

- * Date (year, month, day)
- * Type day (weekday or weekend-holiday)
- * Fishing method
- * Interview time
- * Location
Reef zone fished
- * Number of fishermen
- * Number of gear units
- * Actual hours fished per gear
- * Estimated trip time
Total count for all species combined
Type total count
- * Total weight for all species combined
Type total weight
Total number of species
- # Total count for each species
Type count for each species
- # Total weight for each species
Type total weight for each species
- # Species name (or species group)
Length for an individual fish
Type individual length

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- Weight for an individual fish
- Type individual weight
- Bait
- Wind direction
- Wind speed
- Weather conditions
- Cloud cover
- Surf
- Tidal stage
- Swell direction

As in the offshore survey, the interviewer cannot always obtain information on all items listed. Those marked with an asterisk are essential to the data expansion process for estimating total catch and effort. Those marked with a pound or number sign are essential to estimating the percent species composition of the catch. The "type" elements (e.g., type individual length) identify the kind of measurements, i.e., either actual, estimated, or calculated.

DATA PROCESSING SYSTEMS

The Guam data processing systems are divided into two separate and distinctly different systems, one for processing the commercial landings data and one for processing the DAWR creel survey data.

Commercial Landings

The processing system for the commercial landings data collected from the wholesalers is fairly straightforward. A purchase form is completed by the wholesaler each time fish are purchased from a fisherman. Catches are divided into categories for weighing by species or species group, and where practicable, number of pieces is recorded. Preferably, coding and initial quality control of the forms are done by Coop or DAWR personnel before they are shipped to WPACFIN for computer processing; however, these activities must sometimes be done by WPACFIN staff. Data are entered into a computer and loaded into central WPACFIN data bases, where edit reports are generated and used to locate and correct any errors in the data base. Once all edits, verifications, and corrections are made, summary reports are generated. Standard reports available include total monthly and annual landings by species, total landings by fisherman, and landings by fisherman by species. Purchase forms are returned to the wholesalers along with summary reports and graphs for their use.

Creel Surveys

The processing systems for the creel surveys are much more complex than those for the commercial landings data. The basic data handling and processing systems for the inshore and offshore surveys are the same. Data forms completed in the field during the participation and creel surveys are returned to the office and edited for completeness and legibility before the data are entered into structured computer data bases by using commercially available data base management software. Edit and summary reports are produced to verify the quality of the data, and any errors are corrected in the data bases. Data bases are then translated into standard record formats, which are readable by the data processing and expansion systems programmed by WPACFIN specifically for the offshore and inshore surveys. As data are converted into the Guam Offshore Expansion System (GOES) and the Guam Inshore Expansion System (GIES), additional error checks are performed by the computer to ensure only valid information enters the expansion systems. Errors are flagged and printed to facilitate correction. The GOES and GIES are menu-driven systems that step the user through a series of processes that summarize creel survey and participation data to produce catch and effort expansion and species composition files and reports. Although the GOES and GIES allow processing data for whatever time increment the user specifies, typically 1 month of data is processed at a time for the offshore surveys, and 3-month or annual data are combined for the inshore surveys.

Generally speaking, the expansion algorithms for the offshore and inshore surveys are very similar. Estimates of total catch, effort, and participation for each fishing method are generated from information collected during the participation and creel surveys. The GOES uses same-day catch and effort averages to expand the participation counts, whereas the GIES uses user-specified, time period catch and effort averages to expand the daily participation counts. Inshore day and night surveys are treated identically but separately. The daily estimates are considered measurements of the fisheries for that day. Average weekday and weekend-holiday estimates and their associated variances or confidence intervals are created from individual daily measurements. These are weighted by the number of each type of day in the month, or other timespan, and multiplied by proportionality constants to adjust for percent coverage to produce estimates of total catch, effort, and participation along with their confidence intervals. All steps in the expansion process are stratified by fishing method. The expansion systems produce several detailed summary reports and a summary expansion data file containing the final totals for all important catch and effort statistics. This summary expansion file is later used to produce the types of reports contained in this document.

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Estimates of species composition of the expanded catch are obtained for each method by multiplying the calculated percent species composition of the surveyed catch by the expanded total catch. Percent species composition by fishing method is obtained from the sampled catch based on the average individual weight and the total number of individuals recorded for that species. The average size of each species is obtained by one of three methods, depending on the availability of data in the data base. If total weight and count information are available, the average size per individual is calculated by dividing the total weight by the total count. If total weight and count information are not available but individual weight measurements for a species are available, the average size per individual is calculated by dividing the sum of all individual weights by the total number of individuals weighed. If neither of these methods can be used because no size information is available in the data base, the user is asked to input the species' average size, which is then multiplied by its total count to estimate total sampled catch of that species. Therefore, percent species composition is calculated by dividing the estimated sampled weight of the species by the estimated total sampled weight of all species combined. The species composition programs produce summary reports for immediate reference and summary data files for later use by reporting and summarizing software for generating the types of reports contained in this document.

Catch, effort, and participation data collected during the seasonal fisheries for bigeye scad and juvenile rabbitfish are processed by hand. Interview records are scarce, so hand tabulations and expansions are made to produce ballpark estimates of catch.

DATA REPORTING SYSTEMS

The Guam data reporting systems are divided into two separate systems, one for reporting on the commercial landings data and one for reporting the results of the creel survey.

Commercial Landings

After completing all editing and quality control activities for the commercial landings data, monthly and annual summary reports by species are generated. The commercial landings reports section of this document includes monthly and annual reports for 1987. Volumes II and III of this report series contained these reports for July 1979 through December 1986. Each report contains information on the pounds, value, average price per pound, and number of recorded landings for each species or species group. The number of recorded landings ("RECORDS" in the tables) is a measurement of how many times

each species was purchased, regardless of its number or weight in the landing. This statistic is provided to give an indication of the frequency each species is reported. The POUNDS can be divided by the RECORDS to calculate the average weight of each landing. Each monthly report contains a subtotal for the sum of all species combined for that month, and the December report also includes the annual total. Annual reports contain the total landings for each species and the total recorded landings for all species for the calendar year.

Included with the commercial landings summary reports are graphs of some of the important statistics. The following groupings of species, species categories, and abbreviations are used in the tables and graphs for Guam's commercial landings:

I. Pelagic Management Unit Species (PMUS)

Mahimahi (dolphinfish)
 Marlin (probably all blue but possibly striped or black)
 Shortbill spearfish
 Sailfish
 Wahoo
 Sharks

II. Bottom Fish Management Unit Species (BMUS)

Jacks (unclassified but excluding bigeye scad)
 Bottom fish (unclassified)
 Ehu (red snapper)
 Gindai (flower snapper)
 Grouper
 Kalekale (pink snapper)
 Lehi (silverjaw snapper)
 Onaga (red or longtail snapper)
 Opakapaka (pink snapper)
 Uku (gray snapper)
 Emperorfish

III. Billfish

Marlin (probably all blue but possibly striped or black)
 Shortbill spearfish
 Sailfish

IV. Tunas

Tunas (unclassified)
 Skipjack tuna
 Yellowfin tuna
 Dogtooth or white tuna
 Kawakawa

V. Other Tuna

All the above tunas excluding skipjack and yellowfin tunas.

VI. Fisheries Categories

A. Pelagic Species

All PMUS and tuna species plus the following:

Troll fish (unclassified)

Barracuda

Rainbow runner

B. Bottom Fish

Same as the BMUS

C. Reef Fish

Reef fish (unclassified)

Giant wrasse

Rabbitfish

Rudderfish

Squirrelfish

Parrotfish

Snapper

Surgeonfish

Unicornfish

Goatfish

D. Other

Miscellaneous (unclassified)

Bigeye scad

Mullet

Eels

Milkfish

Invertebrates (unclassified)

Crabs (unclassified)

Coconut crab

Lobster

Shrimp

Octopus

Squid

Seaweeds

Imported

Creel Surveys

Two general types of reports are included in this document from the DAWR creel surveys, catch and effort expansion reports and species composition reports. These reports are produced by using the expansion and species composition files created by the GOES and GIES as input to a series of utility programs developed by WPACFIN. The utility programs reorganize, format, and summarize data from the GOES and GIES files to improve the presentation of the data and reduce the amount of space required to report the important statistics. Two of the most significant space saving improvements are the combining of many species into species groups, usually to the family level, and the combining of lesser used fishing methods into a single category. The original offshore and inshore species composition files contained about 300 different species categories, which were reduced to about 90 categories. For instance, 22 species of squirrelfish and 20 species of wrasse were reduced to just the 2 family groupings. All significant or important species retain their individual identity and are reported separately in the tables. In the original offshore species composition files, catches were reported for nine fishing methods; however, only two methods, trolling and bottom fishing, were significant as they generally accounted for over 97% of the catch. Therefore, reports of offshore species composition were reduced to just three method categories, trolling, bottom fishing, and other. Inshore species composition reports were reduced to totals only. Expansion reports for the inshore and offshore surveys include estimates of total catch and effort for each method recorded.

Monthly and annual catch and effort expansion reports and species composition reports are presented for the offshore fisheries for 1987. Monthly expansion and species composition reports have matching totals for catch by fishing method since the monthly species composition reports are based on the expansion files. Annual expansion and species composition reports also have identical totals because the species reports were generated from the annual expansion files. However, the totals on the annual reports will not equal those obtained by adding all of the monthly files together because the annual expansion reports were generated by re-expanding the entire year's data together, thereby increasing the sample size significantly, and it is hoped, improving the annual estimates of percent species composition and of catch and effort and their associated coefficients of variation (CV's). This also makes expansion possible for months in which sampling was insufficient or nonexistent. The annual species composition reports were created by calculating annual percentages of species composition by combining all sampling for the year and then multiplying these percentages by the annual expansion totals. This allows calculation of percent species composition based on greatly

increased sample size. Annual expansion and species composition reports are presented for the day and night inshore creel surveys for 1987. Combined day-night and offshore-inshore species composition reports are also presented for 1987.

Computer generated numbers and all totals in the reports are subject to rounding error. All catches are reported in pounds, and effort, in hours (boat hours for the offshore survey and gear hours for the inshore surveys). In the offshore expansion reports, the boat counts by fishing method will not add to the total boat count when the same boat was used for more than one method on a single trip. In these cases, the boat is included in the count for each method used but included only once in the total boat count. A separate CV is included for each statistic reported in the offshore expansion reports, but because of the differences in the offshore and inshore expansion algorithms, only a single CV is included for all statistics reported in the inshore expansion reports. The CV provides a measurement of the relative variation associated with the estimate preceding it and is calculated by dividing the standard error of the estimate by the estimate and multiplying by 100 and rounding to express the answer as a whole percentage. The larger the CV, the larger the relative variation in the data used to generate the estimate and, therefore, the less precise the estimate. An asterisk following a line means the number of samples collected for that method during that month were insufficient to properly calculate the CV. There must be at least two weekday and two weekend-holiday samples for each method to properly compute a standard error and, therefore, properly compute the CV. If an asterisk is present and the CV is greater than zero, then samples on either the weekdays or the weekend-holidays were sufficient to compute a standard error for that type of day but not for the other type of day. In this case, the CV provided in the report is for the type of day in which sample information met the minimum requirements for calculating CV. If an asterisk is present and the CV equals zero, then neither day had sufficient number of samples to calculate CV. It follows then, anytime an asterisk is present for any of the methods, the totals for the month are questionable.

In the offshore expansion reports, average monthly catch per unit of effort (CPUE) is calculated by using the same type of algorithm as for the other expansion elements, and it has an associated CV. First, the average daily CPUE is calculated by dividing the total weight of the fish sampled for a day by the total number of hours fished to produce that catch. Next, the average weekday and weekend-holiday CPUE's are calculated by summing the average daily CPUE's for each type of day and then dividing by the number of survey days for each type of day. These averages are multiplied by the number of weekdays and weekend-holidays, respectively, in that month, then the products

are summed and divided by the total number of days in the month to produce the average monthly CPUE for each offshore fishing method. The average monthly offshore CPUE could also be calculated by dividing the estimated monthly catch by the estimated monthly boat hours, but this would provide no indication of the variability of the CPUE and also essentially weight the average CPUE by the level of participation. However, for the inshore fisheries, which have a much lower number of creel interviews, the average monthly CPUE by fishing method is calculated by combining catch and effort information over a large timespan and, therefore, does not have an associated CV. Thus, the CPUE's for inshore fishing methods are calculated by dividing the sum of the catch by the sum of the gear-hours for whatever time period is included in the expansion.

Offshore species composition reports provide estimated landings and percent species composition for each species or species group for the two major offshore fishing methods, trolling and bottom fishing; a total for all other methods combined; and an overall total for all methods. The combined offshore-inshore and inshore species composition reports provide the statistics only for all methods combined.

The reports for the 1987 Annual Mariana's Fishing Derby include derby and species totals by day for a variety of catch and effort statistics. Due to some confusion in scheduling of the Derby, DAWR biologists were not able to obtain complete samples on all days. Adjustments of sampled data were made based on the best available information to "reconstruct" complete sampling as accurately as possible. Seven major pelagic species are targeted during the derby, including billfish (primarily blue marlin but also sailfish, spearfish, and black marlin), yellowfin tuna, skipjack tuna, mahimahi, wahoo, rainbow runner, and barracuda. Most effort is directed at marlin, wahoo, and yellowfin tuna because prizes for these categories are the best. This tournament continues to grow in popularity and is the biggest organized fishing event in Guam.

INTERPRETATION OF STATISTICS

The user is reminded again to pay heed to the precautions and assumptions identified earlier in this document, when making interpretations of or inferences from data reported in the tables and graphs. Remember also that neither the commercial landings summaries nor the creel summaries are based on a census of all the fishing activities, but on samples of those activities. Commercial landings reports are believed to include a high percentage of the actual commercial landings made on Guam. The creel survey expansion reports are based on surveys of the offshore and inshore fisheries conducted 4 times per

month. One of the major factors in expanding the survey data into monthly and annual estimates is the use of proportionality constants to adjust for percent coverage of the surveys. The flexibility of the survey design allows for refinement of these constants as additional information is gained on Guam's fishing activities. If the constants are improved upon, the basic survey data can be re-expanded to create better overall estimates. However, the variability and species composition would not be expected to change since these statistics are strictly based on the actual survey information collected from the fishermen.

The creel survey reports in this section do not include estimates of catches made during the seasonal fisheries for bigeye scad and juvenile rabbitfish. Therefore, the user must remember to adjust estimates of the total inshore and combined inshore-offshore fisheries. Based on an admittedly small sample size, DAWR's best estimates of these seasonal fisheries for 1987 are 4,000 and 40,000 pounds for juvenile rabbitfish and bigeye scad, respectively.

Table IV.1.3

GUAM FEBRUARY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
JACKS	4	143.50	215.25	1.50
SHARKS	3	145.50	72.75	0.50
BOTTOM FISH	3	123.00	246.00	2.00
UKU (GRAY SNAPPER)	1	19.50	29.25	1.50
REEF FISH	26	672.25	1324.50	1.97
PARROTFISH	1	30.00	45.00	1.50
GOATFISH	3	81.50	122.25	1.50
TROLL FISH	1	51.00	76.50	1.50
BARRACUDA	24	477.50	692.75	1.45
DOLPHIN (MAHIMAHI)	268	17523.50	28287.87	1.61
MARLIN	4	389.00	488.75	1.26
RAINBOW RUNNER	3	95.50	143.25	1.50
WAHOO	121	5563.50	10880.36	1.96
SKIPJACK TUNA	41	1175.50	1129.62	0.96
DOGTOTH TUNA	13	314.00	471.00	1.50
YELLOWFIN TUNA	49	2203.50	4167.37	1.89
** SUBTOTAL **	565	29008.25	48392.47	

Table IV.1.4

GUAM MARCH 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
JACKS	6	129.50	194.25	1.50
SHARKS	2	79.50	39.75	0.50
BOTTOM FISH	3	157.50	315.00	2.00
UKU (GRAY SNAPPER)	1	32.50	48.75	1.50
REEF FISH	45	1166.50	2230.08	1.91
RABBITFISH (HITTING)	1	3.00	4.50	1.50
TROLL FISH	1	16.50	24.75	1.50
BARRACUDA	15	294.50	412.50	1.40
DOLPHIN (MAHIMAHI)	147	7166.75	9641.82	1.35
MARLIN	7	1159.00	1343.65	1.16
RAINBOW RUNNER	1	4.00	6.00	1.50
WAHOO	162	9739.75	16409.53	1.68
SKIPJACK TUNA	33	858.00	844.12	0.98
DOGTUOTH TUNA	10	248.00	359.25	1.45
YELLOWFIN TUNA	84	5902.00	10886.66	1.84
 ** SUBTOTAL **	 518	 26957.00	 42760.61	

Table IV.1.5

GUAM APRIL 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
BIGEYE SCAD (ATULAI)	1	164.50	329.00	2.00
JACKS	9	112.50	168.75	1.50
SHARKS	1	35.00	17.50	0.50
BOTTOM FISH	6	129.00	252.32	1.96
UKU (GRAY SNAPPER)	1	5.00	7.50	1.50
REEF FISH	58	1597.25	3100.32	1.94
BARRACUDA	14	188.25	237.30	1.26
DOLPHIN (MAHIMAH)	155	8301.50	11721.82	1.41
MARLIN	28	3518.50	3598.00	1.02
SAILFISH	6	303.50	294.27	0.97
RAINBOW RUNNER	4	45.00	72.88	1.62
WAHOO	150	7723.25	12640.44	1.64
SKIPJACK TUNA	44	1388.95	1389.70	1.00
DOGTOTH TUNA	11	301.50	368.36	1.22
YELLOWFIN TUNA	98	6933.00	10428.96	1.50
** SUBTOTAL **	586	30746.70	44627.12	

Table IV.1.6

GUAM MAY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
MISCELLANEOUS	6	77.50	93.25	1.20
BIGEYE SCAD (ATULAI)	26	1411.00	2785.50	1.97
JACKS	9	188.50	235.74	1.25
BOTTOM FISH	26	977.90	1859.96	1.90
EHU (RED SNAPPER)	2	36.50	82.12	2.25
GINDAI (FLOWER SNAP)	3	96.50	174.37	1.81
GROUPE	1	16.50	37.12	2.25
ONAGA (RED SNAPPER)	1	18.00	40.50	2.25
UKU (GRAY SNAPPER)	5	54.50	81.75	1.50
REEF FISH	61	2356.00	4448.27	1.89
EMPEROR (MAFUTE)	1	7.50	11.25	1.50
BARRACUDA	24	395.00	493.74	1.25
DOLPHIN (MAHIMAHI)	63	2291.00	3322.99	1.45
MARLIN	42	6512.50	5443.48	0.84
SAILFISH	4	248.50	218.87	0.88
WAHOO	68	2362.50	3679.35	1.56
SKIPJACK TUNA	63	1798.25	1691.24	0.94
DOGTUOTH TUNA	7	265.00	296.50	1.12
YELLOWFIN TUNA	86	4726.00	6845.06	1.45
LOBSTER	2	9.00	27.00	3.00
** SUBTOTAL **	500	23848.15	31868.06	

Table IV.1.7

GUAM JUNE 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
MISCELLANEOUS	1	4.50	6.75	1.50
BIGEYE SCAD (ATULAI)	12	490.00	980.00	2.00
JACKS	5	110.50	145.12	1.31
SHARKS	5	239.50	119.75	0.50
BOTTOM FISH	28	715.00	1432.50	2.00
GINDAI (FLOWER SNAP)	2	98.50	221.63	2.25
KALIKALI (PINK SNAP)	1	9.50	21.38	2.25
ONAGA (RED SNAPPER)	1	41.50	93.38	2.25
OPAKAPAKA (PINK SNP)	1	12.00	27.00	2.25
UKU (GRAY SNAPPER)	11	225.50	334.25	1.48
REEF FISH	32	965.00	1841.62	1.91
EMPEROR (MAFUTE)	5	594.50	1189.00	2.00
BARRACUDA	13	302.00	381.86	1.26
DOLPHIN (MAHIMAHI)	16	420.00	840.00	2.00
MARLIN	22	3160.00	3160.00	1.00
SAILFISH	1	54.00	54.00	1.00
RAINBOW RUNNER	3	31.00	46.50	1.50
WAHOO	32	1186.00	2372.00	2.00
SKIPJACK TUNA	44	2006.25	2006.25	1.00
DOGTUOTH TUNA	5	452.00	569.74	1.26
YELLOWFIN TUNA	59	4076.00	7302.50	1.79
LOBSTER	7	92.00	241.99	2.63
 ** SUBTOTAL **	 306	 15285.25	 23387.22	

Table IV.1.8

GUAM JULY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
BIGEYE SCAD (ATULAI)	11	629.50	1229.13	1.95
JACKS	1	9.00	13.50	1.50
BOTTOM FISH	24	1106.75	2188.75	1.98
GINDAI (FLOWER SNAP)	1	6.00	13.50	2.25
GROUPE	3	60.50	99.75	1.65
KALIKALI (PINK SNAP)	1	5.00	10.00	2.00
OPAKAPAKA (PINK SNP)	1	15.00	33.75	2.25
UKU (GRAY SNAPPER)	10	223.00	334.50	1.50
REEF FISH	18	529.00	1047.75	1.98
EMPEROR (MAFUTE)	2	30.50	61.00	2.00
BARRACUDA	25	573.00	716.30	1.25
DOLPHIN (MAHIMAHI)	6	170.50	341.00	2.00
MARLIN	46	9637.75	6878.90	0.71
RAINBOW RUNNER	7	49.10	73.66	1.50
WAHOO	33	947.75	1895.50	2.00
SKIPJACK TUNA	44	1846.50	1887.75	1.02
DOGT0OTH TUNA	10	159.50	223.38	1.40
YELLOWFIN TUNA	70	4665.75	7507.36	1.61
LOBSTER	1	11.00	30.25	2.75
OCTOPUS	6	87.00	217.50	2.50
 ** SUBTOTAL **	 320	 20762.10	 24803.23	

Table IV.1.9

GUAM AUGUST 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
BIGEYE SCAD (ATULAI)	6	276.75	474.25	1.71
JACKS	2	47.00	70.50	1.50
BOTTOM FISH	21	1035.00	2063.50	1.99
EHU (RED SNAPPER)	1	7.00	15.75	2.25
GINDAI (FLOWER SNAP)	2	58.00	130.51	2.25
ONAGA (RED SNAPPER)	1	19.00	42.75	2.25
UKU (GRAY SNAPPER)	13	321.50	482.25	1.50
REEF FISH	29	1088.00	2129.88	1.96
WRASSE	1	107.00	80.25	0.75
EMPEROR (MAFUTE)	4	275.50	551.00	2.00
BARRACUDA	17	278.00	347.52	1.25
DOLPHIN (MAHIMAHI)	5	85.50	171.00	2.00
MARLIN	21	4242.00	2783.76	0.66
RAINBOW RUNNER	7	95.50	143.25	1.50
WAHOO	29	1100.00	2200.00	2.00
SKIPJACK TUNA	47	1991.00	1991.00	1.00
DOGTOTH TUNA	9	145.00	181.26	1.25
YELLOWFIN TUNA	68	4439.00	8226.07	1.85
LOBSTER	2	12.50	34.00	2.72
** SUBTOTAL **	285	15623.25	22118.50	

Table IV.1.10

GUAM SEPTEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
BIGEYE SCAD (ATULAI)	1	50.00	75.00	1.50
JACKS	4	109.00	163.50	1.50
SHARKS	1	21.00	10.50	0.50
BOTTOM FISH	9	350.75	701.50	2.00
GINDAI (FLOWER SNAP)	1	64.50	145.12	2.25
UKU (GRAY SNAPPER)	2	54.50	81.75	1.50
REEF FISH	16	654.00	1263.38	1.93
EMPEROR (MAFUTE)	1	23.00	46.00	2.00
BARRACUDA	8	92.25	115.32	1.25
DOLPHIN (MAHIMAHI)	4	87.00	174.00	2.00
MARLIN	18	3011.50	2472.50	0.82
SAILFISH	4	462.50	462.50	1.00
RAINBOW RUNNER	4	89.00	133.50	1.50
WAHOO	18	621.00	1242.00	2.00
SKIPJACK TUNA	38	1597.50	1460.43	0.91
DOGTOTH TUNA	4	114.50	149.13	1.30
YELLOWFIN TUNA	31	1761.50	3305.75	1.88
LOBSTER	2	22.00	61.75	2.81
** SUBTOTAL **	166	9185.50	12063.63	

Table IV.1.11

GUAM OCTOBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
JACKS	8	177.50	266.25	1.50
SHARKS	2	54.00	27.00	0.50
BOTTOM FISH	14	695.50	1391.00	2.00
EHU (RED SNAPPER)	1	10.00	22.50	2.25
GINDAI (FLOWER SNAP)	2	31.00	69.75	2.25
GROUPE	1	32.00	48.00	1.50
LEHI (SILVERJAW)	1	29.00	65.25	2.25
OPAKAPAKA (PINK SNP)	5	127.00	285.75	2.25
UKU (GRAY SNAPPER)	8	156.00	234.00	1.50
REEF FISH	21	759.00	1518.00	2.00
BARRACUDA	17	295.00	368.72	1.25
DOLPHIN (MAHIMAHI)	4	132.50	265.00	2.00
MARLIN	10	1713.00	1713.00	1.00
SAILFISH	2	129.00	129.00	1.00
RAINBOW RUNNER	4	21.50	32.25	1.50
WAHOO	59	3708.00	6861.64	1.85
SKIPJACK TUNA	46	1611.00	1596.75	0.99
DOGT0OTH TUNA	8	108.75	140.30	1.29
YELLOWFIN TUNA	41	1809.00	2973.08	1.64
LOBSTER	1	3.35	10.05	3.00
OCTOPUS	2	6.75	14.88	2.20
 ** SUBTOTAL **	 257	 11608.85	 18032.17	

Table IV.1.12

GUAM NOVEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
BIGEYE SCAD (ATULAI)	2	126.50	203.00	1.60
JACKS	4	36.50	54.75	1.50
SHARKS	1	15.00	7.50	0.50
BOTTOM FISH	8	306.00	579.00	1.89
GINDAI (FLOWER SNAP)	2	13.00	29.25	2.25
ONAGA (RED SNAPPER)	2	14.50	35.00	2.41
UKU (GRAY SNAPPER)	2	43.00	64.50	1.50
REEF FISH	18	306.25	612.50	2.00
BARRACUDA	19	278.00	347.49	1.25
DOLPHIN (MAHIMAHI)	45	757.50	1502.62	1.98
MARLIN	6	686.00	745.24	1.09
SAILFISH	1	50.00	62.50	1.25
RAINBOW RUNNER	6	63.50	95.25	1.50
WAHOO	178	7522.25	11893.64	1.58
SKIPJACK TUNA	38	977.25	875.25	0.90
DOGTUOTH TUNA	7	206.00	257.50	1.25
YELLOWFIN TUNA	23	897.50	1433.12	1.60
 ** SUBTOTAL **	 362	 12298.75	 18798.11	

Table IV.1.13

GUAM DECEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES	RECORDS	POUNDS	VALUE	\$/LB
-----	-----	-----	-----	-----
JACKS	3	91.00	119.00	1.31
BOTTOM FISH	3	54.50	108.25	1.99
GINDAI (FLOWER SNAP)	1	4.50	9.00	2.00
REEF FISH	17	412.50	825.00	2.00
RABBITFISH (HITTING)	1	50.00	100.00	2.00
BARRACUDA	11	196.50	245.63	1.25
DOLPHIN (MAHIMAHI)	57	1750.75	3501.50	2.00
MARLIN	3	561.50	701.88	1.25
RAINBOW RUNNER	2	16.50	24.75	1.50
WAHOO	67	1887.25	2871.88	1.52
SKIPJACK TUNA	27	560.00	560.00	1.00
DOGTOTH TUNA	2	24.50	30.62	1.25
YELLOWFIN TUNA	26	1009.50	1930.75	1.91
 ** SUBBTOTAL **	 220	 6619.00	 11028.26	
 ** TOTAL **	 4519	 219507.30	 329225.23	

Figure IV.1.1

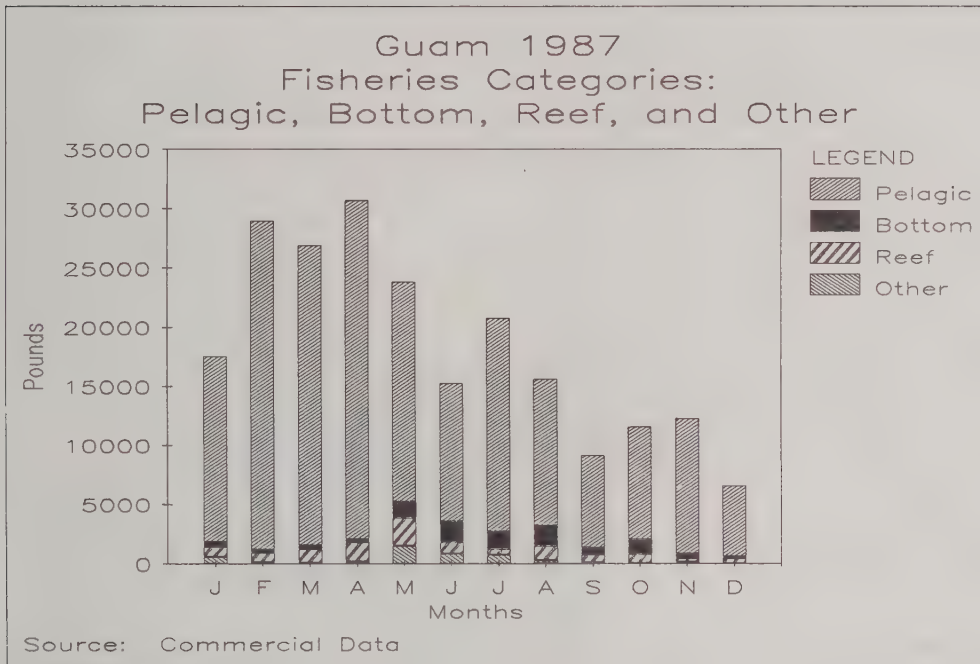


Figure IV.1.2

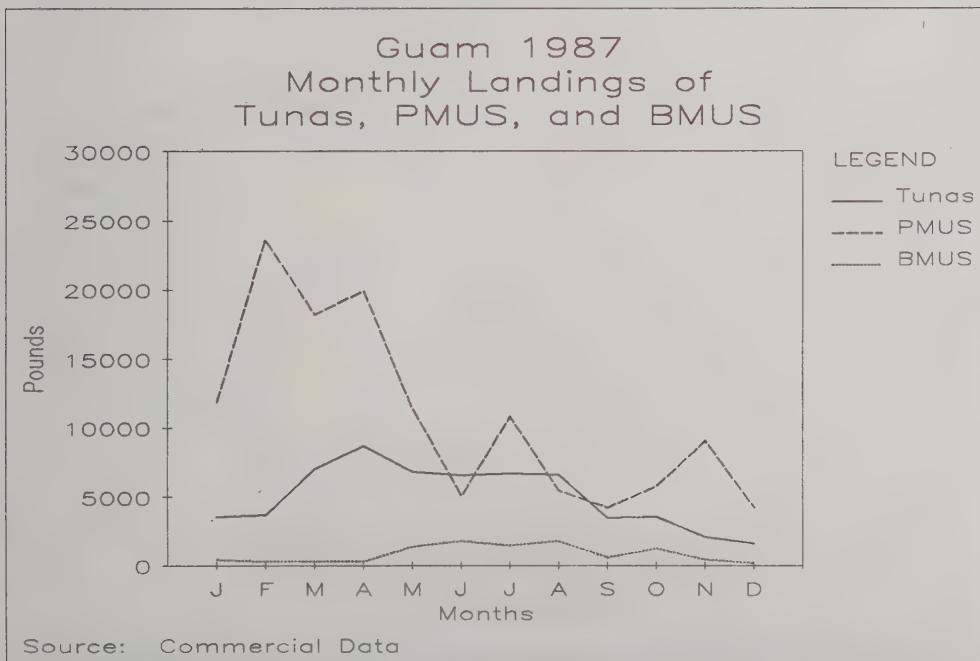


Figure IV.2.3

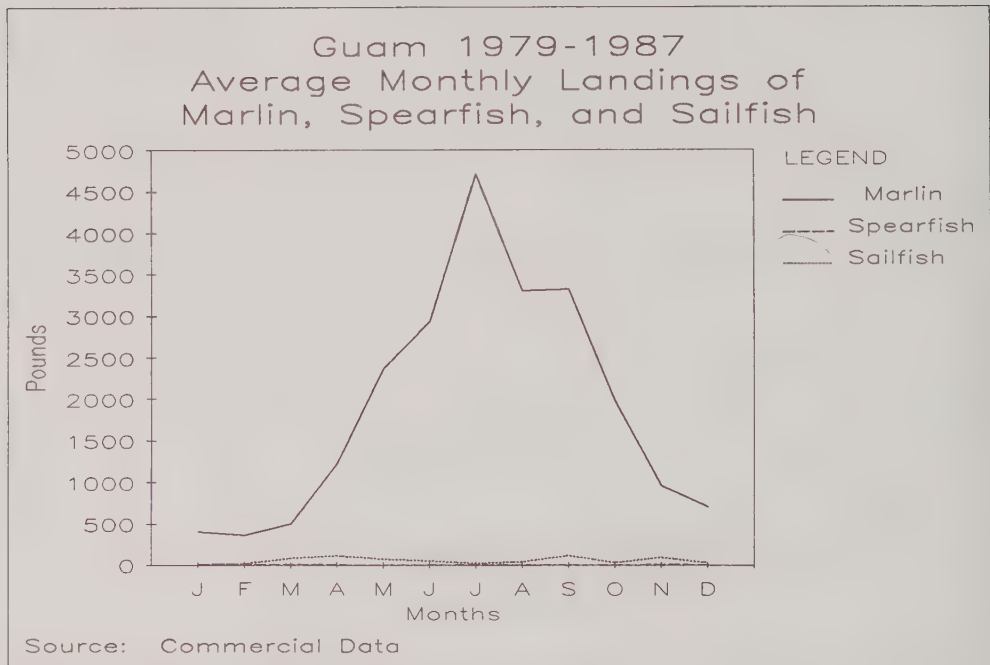


Figure IV.2.4

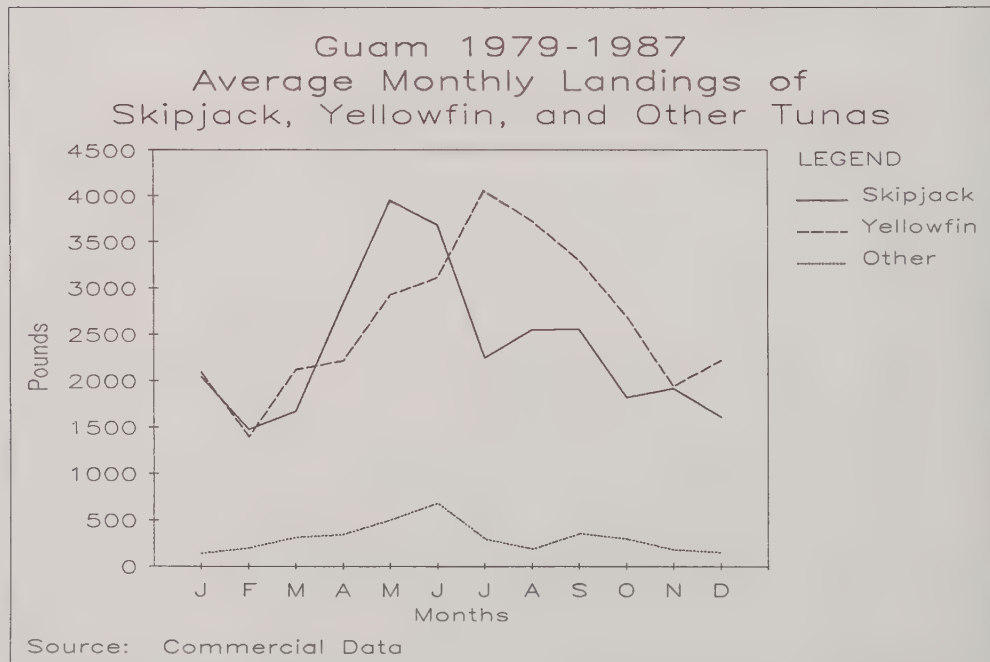


Figure IV.2.5

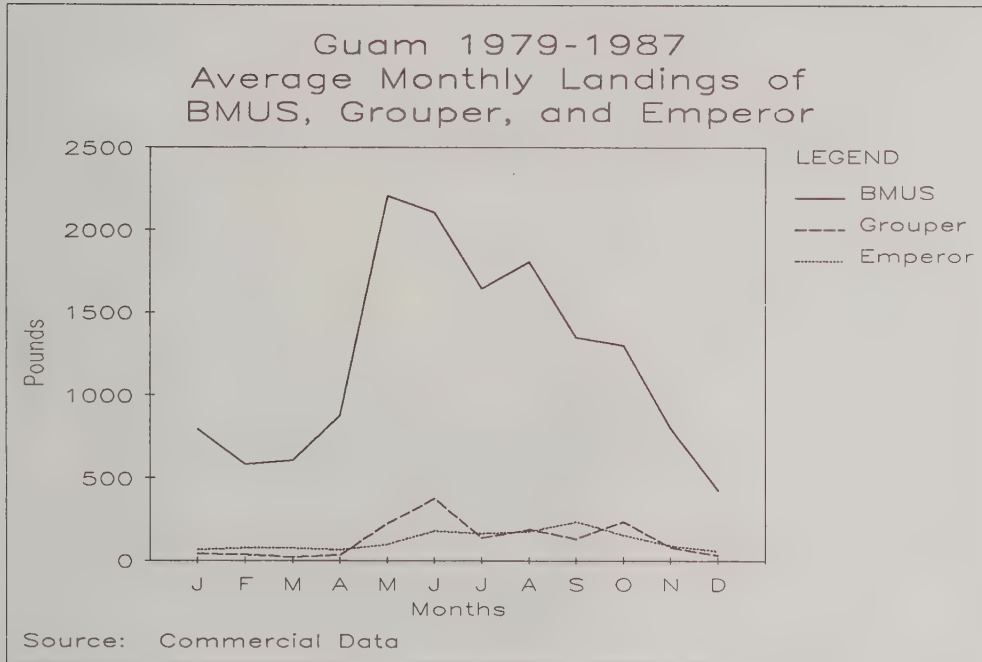


Figure IV.3.1

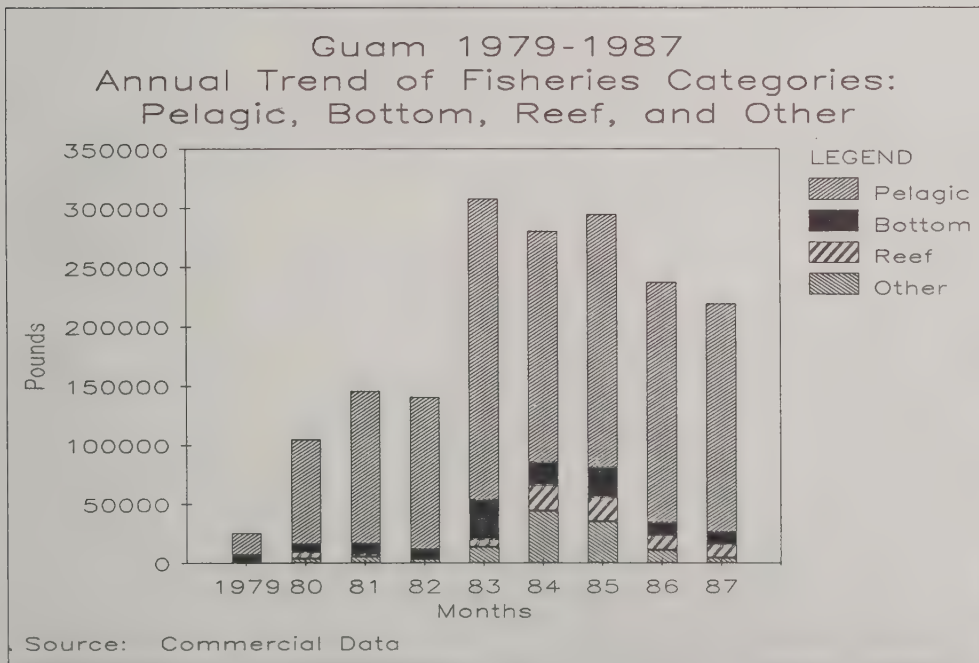


Figure IV.3.2

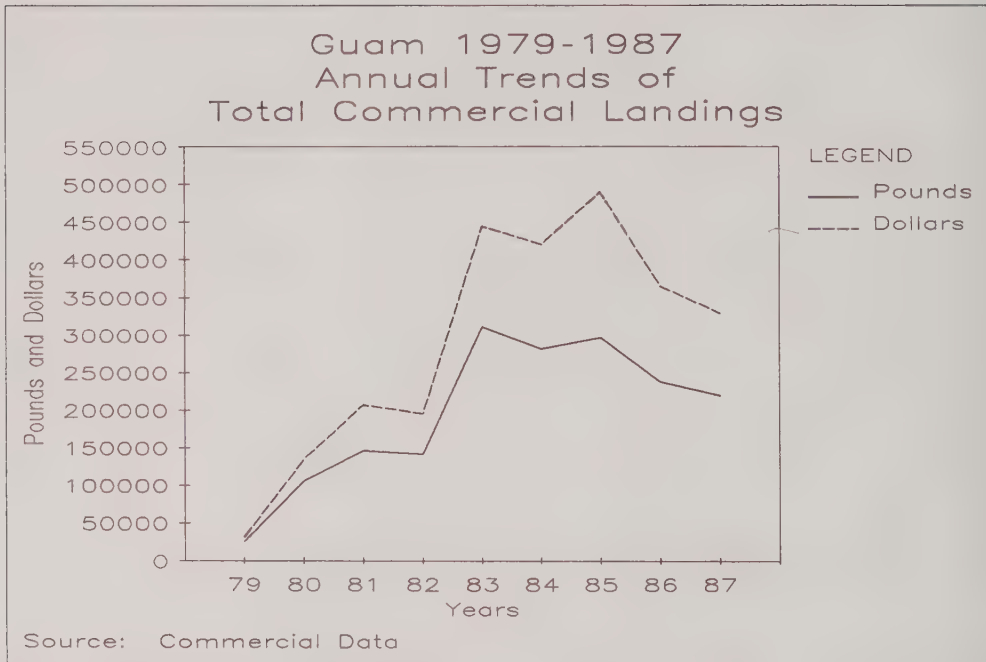


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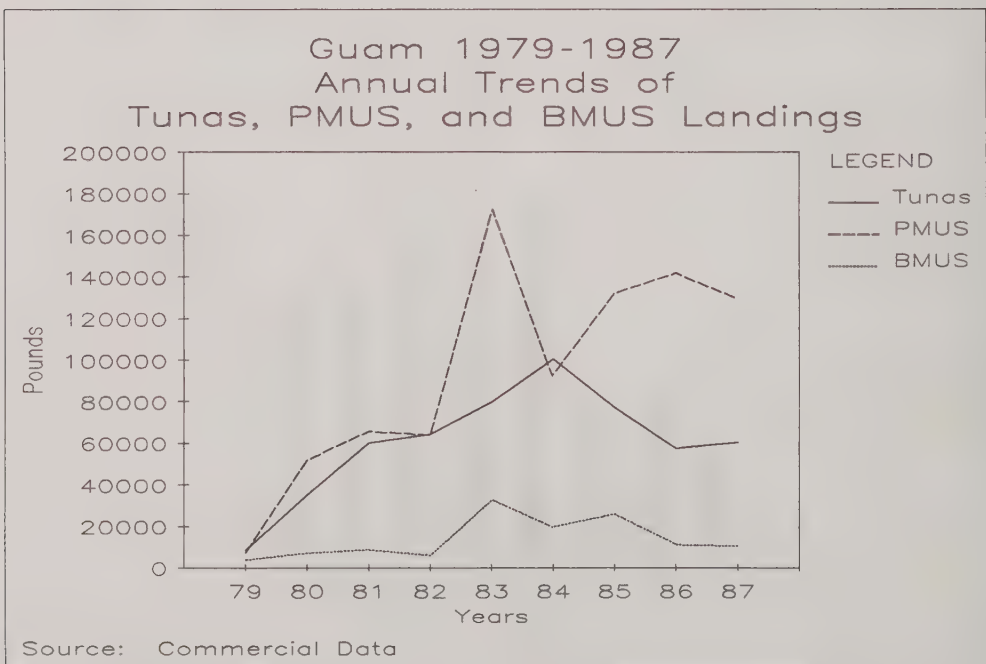


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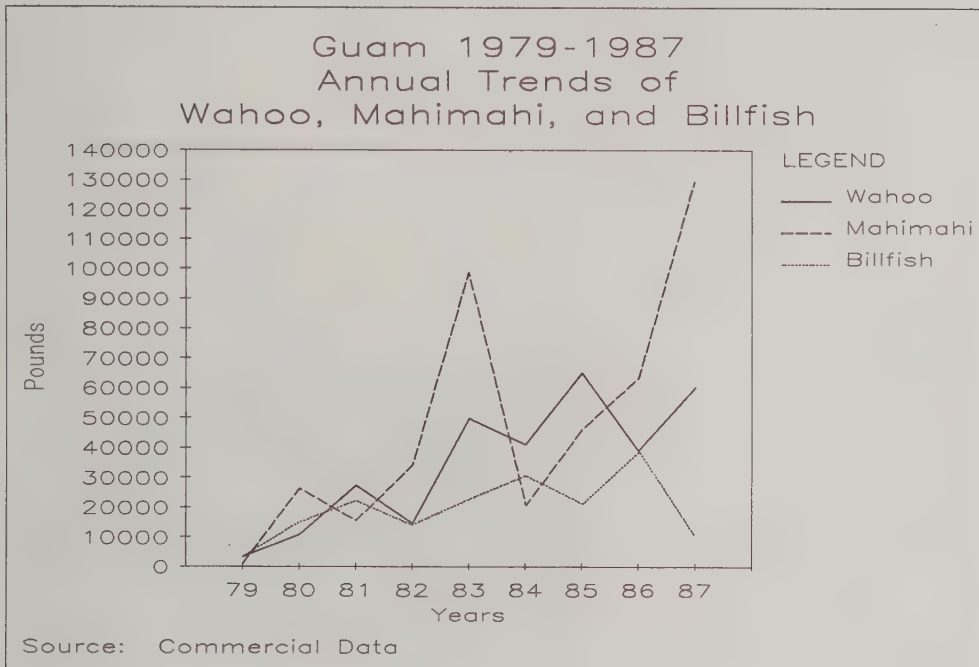


Figure IV.3.5

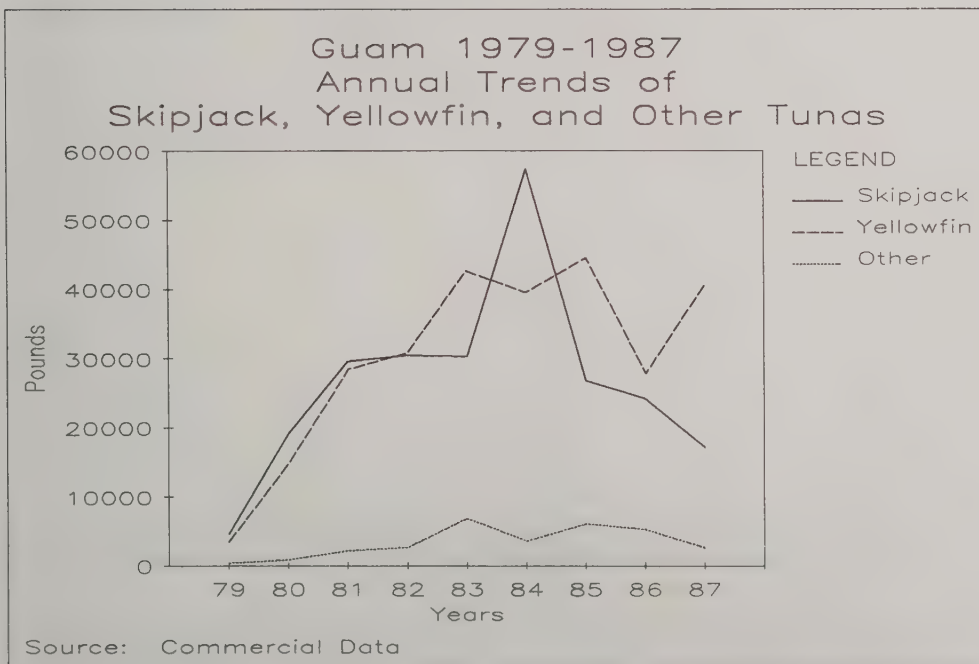


Figure IV.4.1

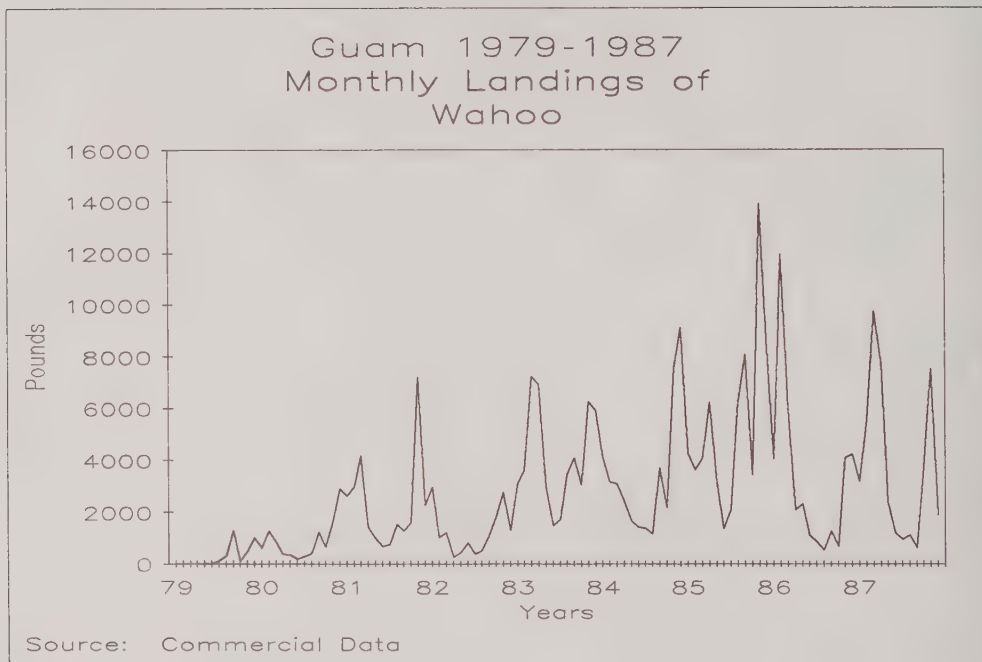


Figure IV.4.2

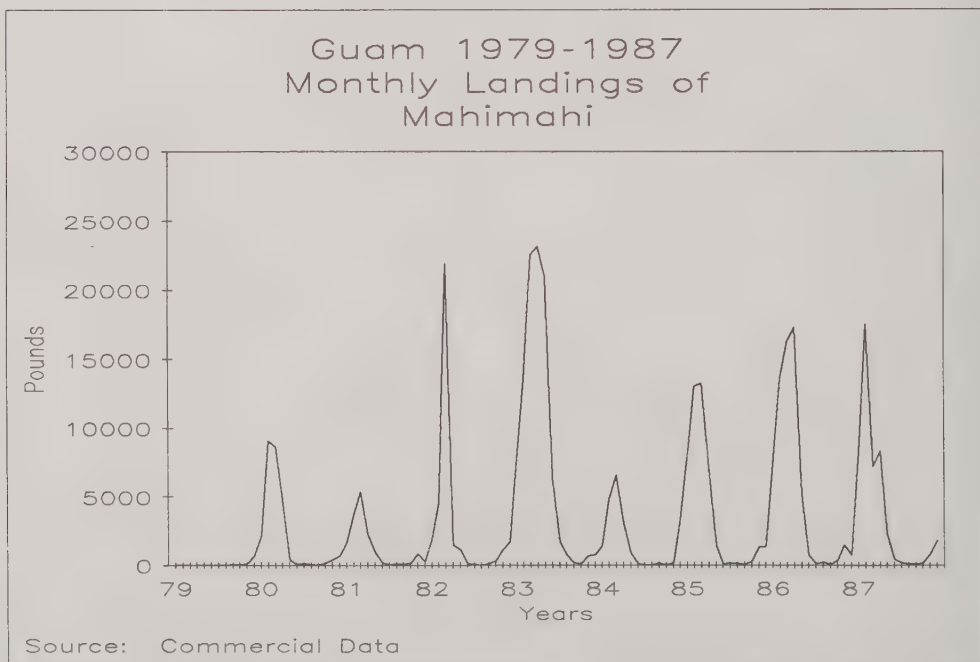


Figure IV.4.3

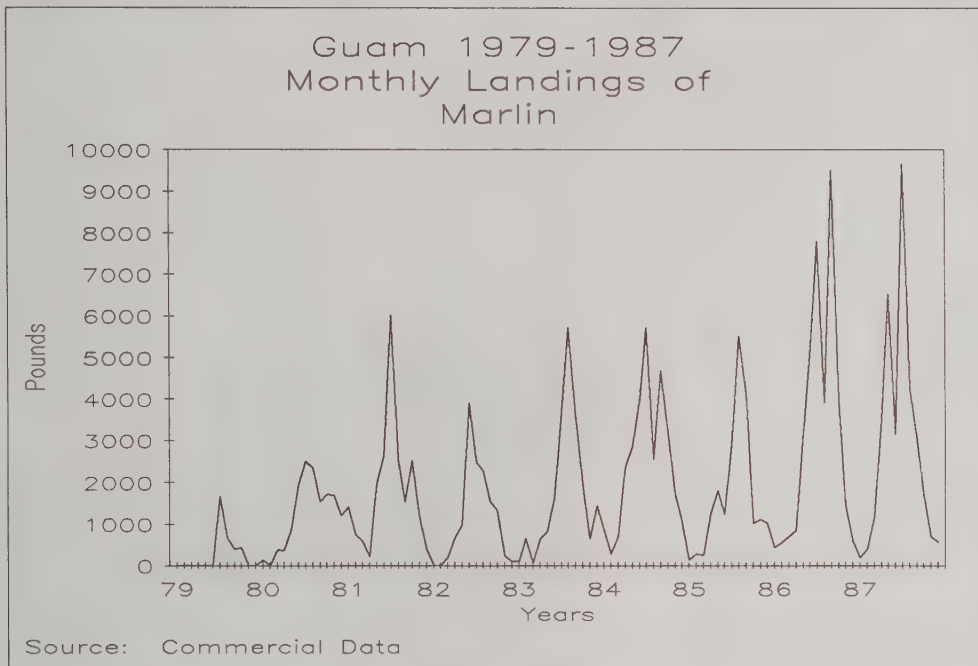


Figure IV.4.4

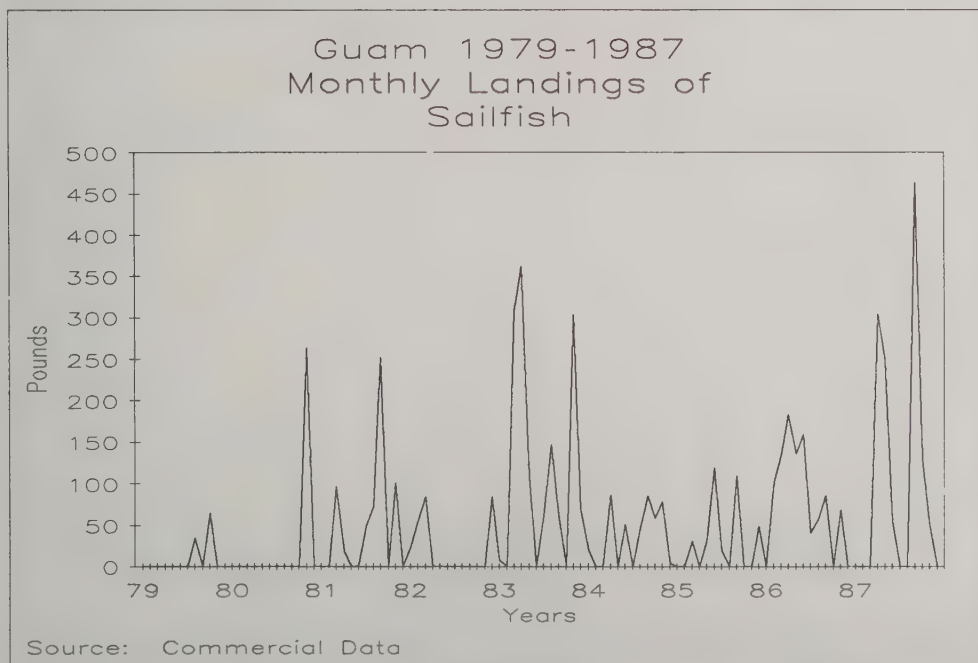


Figure IV.4.5

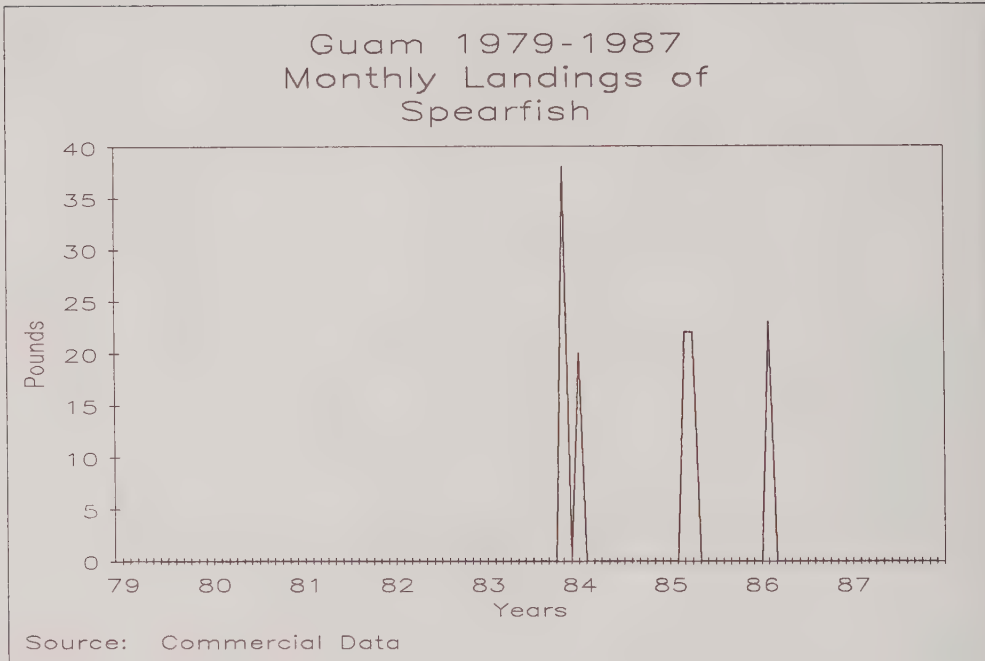


Figure IV.4.6

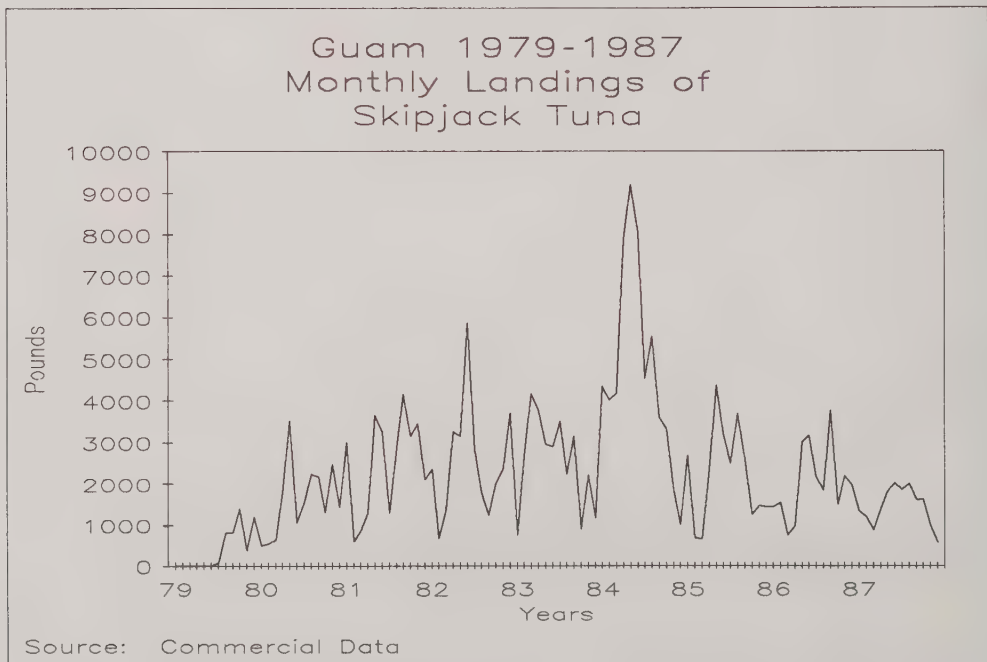


Figure IV.4.7

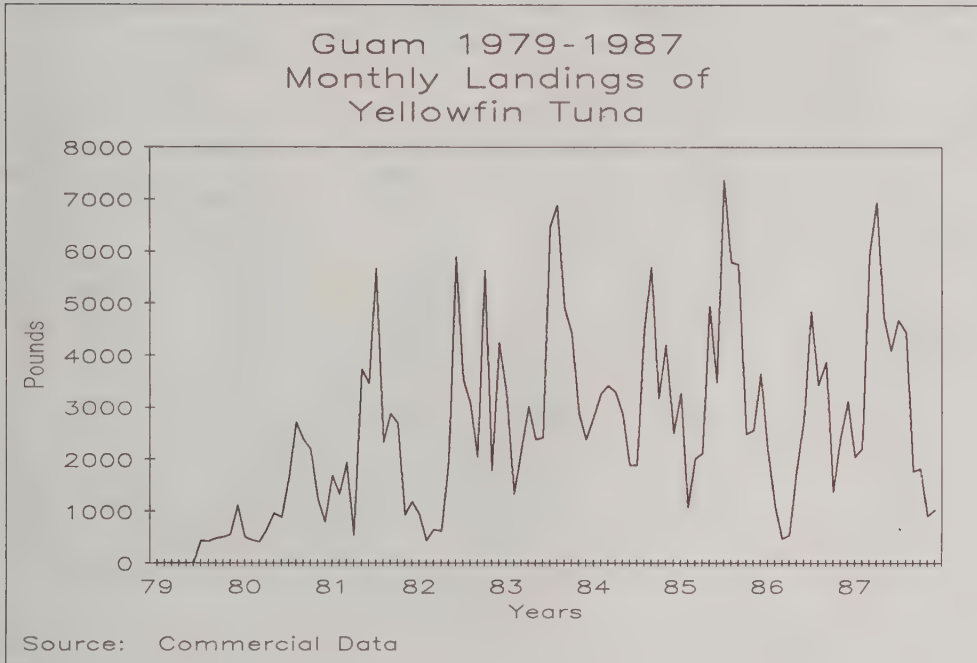


Figure IV.4.8

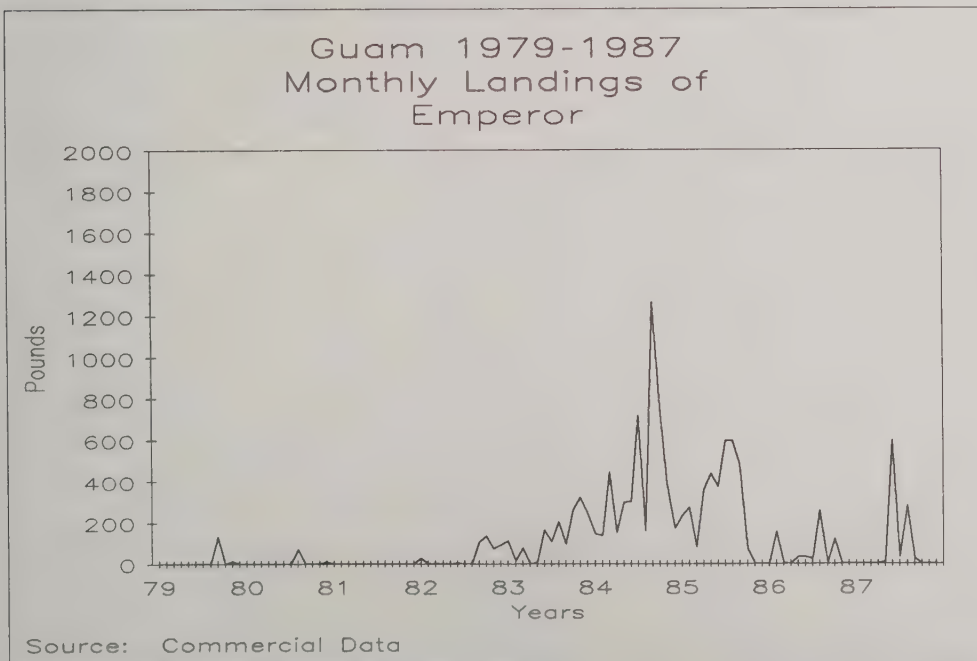
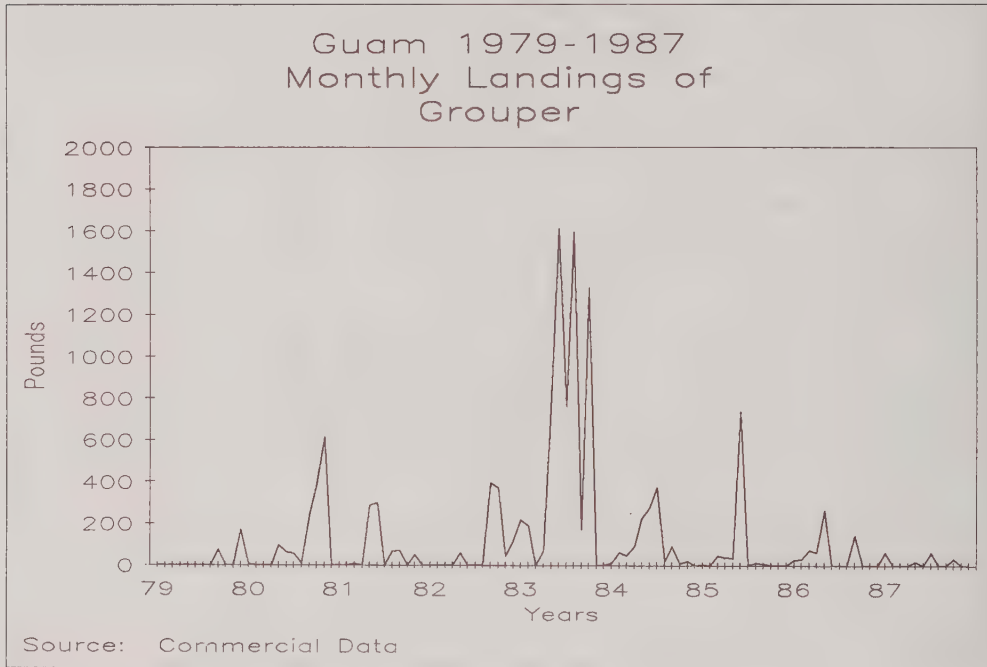


Figure IV.4.9



IV.41

Table IV.2.1

GUAM DAWR 1987 ANNUAL
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
-----	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---
TROLLING	367025.2	12	36368.2	8	7123.8	8	108430.8	9	21721.5	9	10.0	19
BOTTOM FISH	34600.8	22	6190.8	20	1428.2	16	14650.5	20	3407.4	17	5.5	13
ATULAI JIG	10791.5	39	2270.2	33	369.1	32	5857.9	34	937.8	33	5.4	25
SPEAR MIX	797.9	92	41.0	77	27.3	70	123.1	77	81.8	70	13.6	0*
SPEAR SNORKEL	9308.0	28	939.2	24	274.6	20	1465.1	24	473.6	23	10.8	24
SPEAR SCUBA	5462.0	37	379.8	34	167.1	32	703.7	34	368.8	35	15.7	18
OTHER	3385.1	47	365.9	38	79.4	35	1105.7	43	207.7	35	10.1	87
TOTAL:	431370.4	11	46555.1	8	7976.7	8	132336.8	9	23579.9	9	9.1	13

* Not enough data to properly compute Coefficient of Variation (CV).

Table IV.2.2

GUAM DAWR 1987 ANNUAL
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS		% THIS		% THIS	
			TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
SHARKS	5534.4	1.28	2959.0	0.81	565.6	1.63	2009.8	6.76
MORAY EELS	3.0	0	0	0	3.0	0.01	0	0
LIZARDFISH	0.6	0	0	0	0.6	0	0	0
NEEDLEFISH	98.9	0.02	70.1	0.02	0	0	28.8	0.10
SQUIRRELFISH	1337.9	0.31	0	0	1039.5	3.00	298.4	1.00
SCORPIONFISH	13.2	0	0	0	13.2	0.04	0	0
GROUPE	5062.1	1.17	0	0	4080.8	11.79	981.3	3.30
BIGEYES	49.1	0.01	0	0	47.7	0.14	1.4	0
FALSE WHITING	6.0	0	0	0	6.0	0.02	0	0
JACKS	5331.1	1.24	673.2	0.18	2484.3	7.18	2173.6	7.31
RAINBOW RUNNER	1517.8	0.35	1517.8	0.41	0	0	0	0
BIGEYE SCAD (AKULE)	7812.9	1.81	0	0	0	0	7812.9	26.27
DOLPHINFISH (MAHIMAH)	86361.8	20.02	86103.4	23.46	0	0	258.4	0.87
SNAPPERS	1821.1	0.42	240.2	0.07	1053.2	3.04	527.7	1.77
LEHI (SILVERMOUTH)	513.4	0.12	0	0	513.4	1.48	0	0
UKU (JOBFISH)	1050.2	0.24	0	0	1050.2	3.04	0	0
EHU (PINK SNAPPER)	433.6	0.10	0	0	433.6	1.25	0	0
ONAGA (RED SNAPPER)	465.1	0.11	0	0	465.1	1.34	0	0
BLUE LINED SNAPPER	1472.4	0.34	0	0	1436.2	4.15	36.2	0.12
YELLOWTAIL KALIKALI	554.2	0.13	0	0	554.2	1.60	0	0
OPAKAPAKA (PINK SNAP)	339.1	0.08	0	0	339.1	0.98	0	0
YELLOW EYE OPAKAPAKA	434.2	0.10	0	0	434.2	1.25	0	0
GINDAI (FLOWER SNAPPER)	649.0	0.15	0	0	649.0	1.88	0	0
SWEETLIPS	546.3	0.13	0	0	0	0	546.3	1.84
EMPERORS	12064.7	2.80	0	0	11947.6	34.53	117.2	0.39
GOATFISH	608.0	0.14	0	0	442.7	1.28	165.3	0.56
SWEEPERS	11.5	0	0	0	5.9	0.02	5.6	0.02
RUDDERFISH	1148.7	0.27	0	0	0	0	1148.7	3.86
BATFISH	37.8	0.01	0	0	0	0	37.8	0.13
HAWKFISH	3.3	0	0	0	3.3	0.01	0	0
BARRACUDA	8118.2	1.88	7667.6	2.09	372.6	1.08	78.0	0.26
WRASSE	329.9	0.08	6.3	0	95.4	0.28	228.2	0.77
PARROTFISH	4808.0	1.11	0	0	0	0	4808.0	16.16
SURGEONFISH AND TANGS	1388.5	0.32	0	0	65.9	0.19	1322.5	4.45
RABBITFISH	73.5	0.02	0	0	0	0	73.5	0.25
TUNAS	28.0	0.01	28.0	0.01	0	0	0	0
WAHOO	82891.7	19.22	82891.7	22.58	0	0	0	0
KAWAKAWA	1508.7	0.35	1469.9	0.40	38.7	0.11	0	0
DOGTUOTH TUNA	3706.3	0.86	2716.2	0.74	290.7	0.84	699.5	2.35
SKIPJACK TUNA	59228.0	13.73	58878.0	16.04	0	0	350.0	1.18
YELLOWFIN TUNA	41753.8	9.68	41753.8	11.38	0	0	0	0
SAILFISH	5912.8	1.37	5912.8	1.61	0	0	0	0
BLUE MARLIN	73169.3	16.96	73169.3	19.94	0	0	0	0
SHORTBILL SPEARFISH	855.2	0.20	855.2	0.23	0	0	0	0
TRIGGERFISH	497.8	0.12	0	0	497.8	1.44	0	0
ASSORTED BOTTOM FISH	3161.3	0.73	0	0	3161.3	9.14	0	0

Table IV.2.2 (Cont.)

GUAM DAWR 1987 ANNUAL
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS TROLLING GEAR		% THIS BOTTOM GEAR		% THIS OTHER GEAR	
SHALLOW BOTTOM FISH	990.5	0.23	0	0	897.5	2.59	92.9	0.31
DEEP BOTTOM FISH	1612.8	0.37	0	0	1612.8	4.66	0	0
ASSORTED TROLLING FISH	112.7	0.03	112.7	0.03	0	0	0	0
ASSORTED REEF FISH	4661.7	1.08	0	0	0	0	4661.7	15.67
OCTOPUS	521.8	0.12	0	0	0	0	521.8	1.75
SPINY LOBSTERS	609.8	0.14	0	0	0	0	609.8	2.05
SLIPPER LOBSTERS	48.6	0.01	0	0	0	0	48.6	0.16
CRABS	100.2	0.02	0	0	0	0	100.2	0.34
TOTAL ALL SPECIES:	431370.5	100.00	367025.2	85.08	34600.8	8.02	29744.5	6.90

IV.44

Table IV.3.1

GUAM DAWR JANUARY 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	37103.0	44	3566.5	22	751.1	15	9886.1	16	2182.4	10	8.8	18
BOTTOM FISH	1011.4	74	160.8	68	86.9	76	352.0	67	184.0	73	7.6	0*
SPEAR SNORKEL	1550.5	92	130.1	88	30.1	70	140.3	82	40.3	66	8.8	0*
SPEAR SCUBA	921.0	95	66.7	95	22.2	95	133.3	95	44.4	95	13.8	0*
OTHER	122.9	90	50.7	90	10.1	90	101.3	90	20.3	90	2.4	0*
TOTAL:	40708.8	38	3974.7	18	729.5	16	10613.0	14	2080.3	9	9.3	13

Table IV.3.2

GUAM DAWR FEBRUARY 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	59135.8	61	4396.2	45	830.6	45	16468.8	48	3202.7	50	11.6	99*
BOTTOM FISH	1399.0	77	311.1	65	76.0	65	679.6	65	165.9	65	4.2	0*
SPEAR SCUBA	288.1	88	10.3	88	13.8	88	62.0	88	82.7	88	27.9	0*
TOTAL:	60822.9	61	4717.6	46	881.6	46	17210.4	48	3300.1	50	10.8	95*

Table IV.3.3

GUAM DAWR MARCH 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	21124.0	42	2286.5	17	409.4	12	6181.1	20	1162.7	14	7.4	18
BOTTOM FISH	268.3	88	51.8	11	23.0	1	132.7	28	57.6	19	4.6	138*
TOTAL:	21392.3	40	2338.3	17	383.6	14	6313.7	20	1103.4	16	7.4	17

* Not enough data to properly compute Coefficient of Variation (CV).

IV.45

Table IV.3.4

GUAM DAWR APRIL 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	55127.7	9	3672.2	4	702.9	4	9842.5	4	1852.8	5	15.1	10
BOTTOM FISH	701.3	11	133.4	4	47.4	27	282.9	2	102.5	32	5.2	12*
ATULAI JIG	123.2	88	62.1	88	7.8	88	124.1	88	15.5	88	2.0	0*
SPEAR SNORKEL	1893.6	46	144.6	12	50.4	1	152.3	11	58.1	11	11.3	59
SPEAR SCUBA	787.0	95	51.6	95	17.2	95	103.3	95	34.4	95	15.2	0*
OTHER	144.0	88	16.3	88	8.2	88	49.0	88	24.5	88	8.8	0*
TOTAL:	58776.9	8	4080.3	5	715.0	5	10554.2	3	1857.4	2	14.3	5

Table IV.3.5

GUAM DAWR MAY 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	30547.9	53	3369.5	23	632.0	20	9353.8	15	1760.4	11	7.7	23
BOTTOM FISH	6558.4	39	963.3	35	206.9	21	1978.9	36	425.0	23	7.5	2
ATULAI JIG	1358.4	90	314.0	82	64.0	66	740.6	83	140.6	65	2.4	0*
SPEAR SNORKEL	1062.5	95	100.4	86	43.0	75	155.6	83	69.6	72	5.9	0*
SPEAR SCUBA	1732.2	90	71.8	87	39.0	81	182.7	86	100.7	79	19.8	0*
OTHER	2008.2	44	113.7	18	43.0	21	227.3	18	86.0	21	16.1	115*
TOTAL:	43267.7	38	4932.7	16	734.7	13	12638.9	11	1970.6	6	8.4	14

Table IV.3.6

GUAM DAWR JUNE 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	21741.2	13	2006.7	17	445.8	16	6478.1	16	1448.0	16	9.2	18
BOTTOM FISH	6081.5	54	1079.1	45	262.4	46	2933.0	50	704.4	52	4.8	10
ATULAI JIG	864.3	49	442.1	7	75.6	0	1360.8	35	226.3	29	1.9	71*
SPEAR SNORKEL	378.5	89	126.1	80	28.2	74	297.1	71	71.4	66	2.3	0*
TOTAL:	29065.5	21	3654.0	25	642.4	21	11068.9	28	1944.7	22	7.1	7

* Not enough data to properly compute Coefficient of Variation (CV).

IV.46

Table IV.3.7

GUAM DAWR JULY 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	39346.5	13	1401.4	35	285.6	29	5347.0	41	1063.9	32	27.9	69
BOTTOM FISH	886.8	62	312.7	84	51.6	57	933.6	84	153.2	56	7.4	63*
ATULAI JIG	402.1	95	111.9	95	14.9	95	335.8	95	44.8	95	3.6	0*
SPEAR SNORKEL	1059.5	78	84.3	90	19.5	70	88.6	86	25.6	65	29.4	0*
SPEAR SCUBA	156.2	87	10.4	87	5.2	87	20.8	87	10.4	87	15.0	0*
TOTAL:	41851.0	12	1920.8	41	358.1	27	6725.9	48	1222.4	32	19.8	57

Table IV.3.8

GUAM DAWR AUGUST 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	11116.4	26	2843.5	8	648.4	2	9941.9	7	2325.0	3	4.5	29
BOTTOM FISH	5165.6	8	853.8	9	199.3	2	2263.7	7	529.3	0	6.1	2*
ATULAI JIG	3869.3	67	750.3	66	111.8	65	1790.0	65	269.9	66	5.3	0*
SPEAR MIX	814.8	92	42.1	77	28.0	70	126.2	77	84.0	70	13.6	0*
SPEAR SNORKEL	119.8	89	54.3	89	10.9	89	108.7	89	21.7	89	2.2	0*
SPEAR SCUBA	439.0	89	26.1	89	21.7	89	52.2	89	43.5	89	16.8	0*
OTHER	1115.0	1	198.1	11	20.1	7	768.1	12	82.1	29	5.7	16*
TOTAL:	22639.8	5	4768.3	11	865.7	9	15050.8	8	2886.7	5	5.5	19

Table IV.3.9

GUAM DAWR SEPTEMBER 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	14884.3	44	1721.3	17	338.1	19	5889.7	19	1170.8	16	6.6	54
BOTTOM FISH	466.3	74	102.2	64	23.0	35	190.5	75	39.0	57	3.8	41*
TOTAL:	15350.7	41	1823.4	15	342.0	19	6080.1	17	1171.8	16	6.6	54

* Not enough data to properly compute Coefficient of Variation (CV).

IV.47

Table IV.3.10

GUAM DAWR OCTOBER 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	15724.3	82	1402.0	71	294.7	65	4135.8	70	886.4	65	8.8	0*
BOTTOM FISH	4293.4	68	535.9	65	133.8	66	1071.8	65	267.6	66	7.9	0*
SPEAR SNORKEL	1273.2	95	150.0	95	25.0	95	150.0	95	25.0	95	8.5	0*
SPEAR SCUBA	186.4	89	25.4	89	8.5	89	25.4	89	8.5	89	7.3	0*
TOTAL:	21477.3	75	2113.3	67	333.6	65	5383.0	68	987.5	66	9.0	0*

Table IV.3.11

GUAM DAWR NOVEMBER 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	35193.5	6	5707.2	9	1000.5	13	14238.3	15	2570.3	25	6.2	8
BOTTOM FISH	6903.8	61	1443.7	53	232.0	46	3183.5	48	542.4	47	4.3	36*
ATULAI JIG	4233.1	76	539.8	88	83.8	86	1328.6	89	205.3	87	14.8	0*
SPEAR SNORKEL	241.4	65	82.5	65	36.8	65	261.8	78	108.5	76	2.9	0*
SPEAR SCUBA	885.2	65	113.5	75	37.8	75	113.5	75	37.8	75	10.5	0*
TOTAL:	47457.1	9	7886.7	6	1168.9	14	19125.6	16	2848.0	24	6.0	6

Table IV.3.12

GUAM DAWR DECEMBER 1987
OFFSHORE CREEL SURVEY EXPANSION SUMMARY

GEAR	CATCH	CV	BOAT HRS	CV	BOAT CNT	CV	PRSN HRS	CV	PRSN CNT	CV	CPUE	CV
TROLLING	22207.9	16	4080.2	5	801.3	4	10271.9	11	2034.1	10	5.4	12
BOTTOM FISH	618.7	5	205.9	16	81.4	30	513.3	15	213.4	30	2.2	50*
SPEAR SNORKEL	1700.5	84	71.2	70	31.7	75	118.9	78	55.5	83	20.2	0*
TOTAL:	24527.1	12	4357.3	4	800.7	6	10904.0	9	2048.4	14	5.8	5

* Not enough data to properly compute Coefficient of Variation (CV).

IV.48

Table IV.4.1

GUAM DAWR JANUARY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS TROLLING GEAR		% THIS BOTTOM GEAR		% THIS OTHER GEAR	
SQUIRRELFISH	76.4	0.19	0	0	0	0	76.4	2.94
GROUPE	555.5	1.36	0	0	56.0	5.53	499.6	19.26
JACKS	43.1	0.11	0	0	43.1	4.26	0	0
DOLPHINFISH (MAHIMAH)	25344.4	62.26	25344.4	68.31	0	0	0	0
SNAPPERS	32.9	0.08	0	0	9.4	0.93	23.5	0.91
LEHI (SILVERMOUTH)	33.3	0.08	0	0	33.3	3.29	0	0
UKU (JOBFISH)	80.3	0.20	0	0	80.3	7.94	0	0
BLUE LINED SNAPPER	34.5	0.08	0	0	34.5	3.41	0	0
SWEETLIPS	71.0	0.17	0	0	0	0	71.0	2.74
EMPERORS	303.2	0.74	0	0	303.2	29.98	0	0
GOATFISH	50.9	0.12	0	0	0	0	50.9	1.96
RUDDERFISH	258.8	0.64	0	0	0	0	258.8	9.98
BARRACUDA	1960.4	4.82	1743.9	4.70	216.6	21.41	0	0
WRASSE	140.2	0.34	0	0	58.8	5.81	81.4	3.14
PARROTFISH	1098.3	2.70	0	0	0	0	1098.3	42.33
SURGEONFISH AND TANGS	204.5	0.50	0	0	0	0	204.5	7.88
RABBITFISH	8.3	0.02	0	0	0	0	8.3	0.32
WAHOO	5740.7	14.10	5740.7	15.47	0	0	0	0
KAWAKAWA	578.3	1.42	578.3	1.56	0	0	0	0
SKIPJACK TUNA	3064.9	7.53	3064.9	8.26	0	0	0	0
YELLOWFIN TUNA	630.9	1.55	630.9	1.70	0	0	0	0
ASSORTED BOTTOM FISH	137.1	0.34	0	0	137.1	13.56	0	0
DEEP BOTTOM FISH	39.2	0.10	0	0	39.2	3.87	0	0
ASSORTED REEF FISH	122.9	0.30	0	0	0	0	122.9	4.74
OCTOPUS	98.8	0.24	0	0	0	0	98.8	3.81
TOTAL ALL SPECIES:	40708.8	100.00	37103.0	91.14	1011.4	2.48	2594.4	6.37

IV.49

Table IV.4.2

GUAM DAWR FEBRUARY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS TROLLING GEAR		% THIS BOTTOM GEAR		% THIS OTHER GEAR	
GROUPEr	321.3	0.53	0	0	321.3	22.96	0	0
RAINBOW RUNNER	179.2	0.29	179.2	0.30	0	0	0	0
DOLPHINFISH (MAHIMAHI)	45026.4	74.03	45026.4	76.14	0	0	0	0
SNAPPERS	6.4	0.01	0	0	0	0	6.4	2.22
BLUE LINED SNAPPER	5.3	0.01	0	0	5.3	0.38	0	0
EMPERORS	1021.1	1.68	0	0	1021.1	72.99	0	0
GOATFISH	39.7	0.07	0	0	39.7	2.84	0	0
BATFISH	30.4	0.05	0	0	0	0	30.4	10.55
BARRACUDA	2329.6	3.83	2329.6	3.94	0	0	0	0
WRASSE	11.6	0.02	0	0	11.6	0.83	0	0
PARROTFISH	155.3	0.26	0	0	0	0	155.3	53.90
SURGEONFISH AND TANGS	54.7	0.09	0	0	0	0	54.7	18.99
RABBITFISH	14.0	0.02	0	0	0	0	14.0	4.85
WAHOO	4532.7	7.45	4532.7	7.66	0	0	0	0
DOGT00TH TUNA	595.6	0.98	595.6	1.01	0	0	0	0
SKIPJACK TUNA	4764.6	7.83	4764.6	8.06	0	0	0	0
YELLOWFIN TUNA	1707.7	2.81	1707.7	2.89	0	0	0	0
OCTOPUS	12.2	0.02	0	0	0	0	12.2	4.22
CRABS	15.2	0.02	0	0	0	0	15.2	5.27
TOTAL ALL SPECIES:	60822.9	100.00	59135.8	97.23	1399.0	2.30	288.1	0.47

Table IV.4.3

GUAM DAWR MARCH 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS TROLLING GEAR		% THIS BOTTOM GEAR	
GROUPEr	42.3	0.20	0	0	42.3	15.76
JACKS	30.8	0.14	0	0	30.8	11.46
DOLPHINFISH (MAHIMAHI)	4644.1	21.71	4644.1	21.99	0	0
SNAPPERS	2.6	0.01	0	0	2.6	0.96
EMPERORS	147.6	0.69	0	0	147.6	55.01
GOATFISH	22.6	0.11	0	0	22.6	8.40
BARRACUDA	80.8	0.38	80.8	0.38	0	0
WAHOO	12554.5	58.69	12554.5	59.43	0	0
SKIPJACK TUNA	654.9	3.06	654.9	3.10	0	0
YELLOWFIN TUNA	548.6	2.56	548.6	2.60	0	0
BLUE MARLIN	2641.0	12.35	2641.0	12.50	0	0
TRIGGERFISH	22.6	0.11	0	0	22.6	8.40
TOTAL ALL SPECIES:	21392.3	100.00	21124.0	98.75	268.3	1.25

IV.50

Table IV.4.4

GUAM DAWR APRIL 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS		% THIS		% THIS	
			TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
NEEDLEFISH	17.0	0.03	0	0	0	0	17.0	0.58
SQUIRRELFISH	10.6	0.02	0	0	10.6	1.51	0	0
GROUPE	271.2	0.46	0	0	57.8	8.25	213.4	7.24
JACKS	775.1	1.32	19.6	0.04	104.4	14.88	651.2	22.09
DOLPHINFISH (MAHIMAH)	20997.2	35.72	20997.2	38.09	0	0	0	0
SNAPPERS	169.6	0.29	14.4	0.03	122.0	17.40	33.2	1.13
BLUE LINED SNAPPER	35.4	0.06	0	0	35.4	5.04	0	0
GINDAI (FLOWER SNAPPER)	53.1	0.09	0	0	53.1	7.57	0	0
SWEETLIPS	386.4	0.66	0	0	0	0	386.4	13.11
EMPERORS	241.8	0.41	0	0	241.8	34.48	0	0
GOATFISH	35.6	0.06	0	0	3.9	0.55	31.7	1.07
RUDDERFISH	165.0	0.28	0	0	0	0	165.0	5.60
WRASSE	21.2	0.04	0	0	0	0	21.2	0.72
PARROTFISH	192.6	0.33	0	0	0	0	192.6	6.53
SURGEONFISH AND TANGS	76.8	0.13	0	0	0	0	76.8	2.61
RABBITFISH	17.0	0.03	0	0	0	0	17.0	0.58
WAHOO	12099.3	20.59	12099.3	21.95	0	0	0	0
DOGTUOTH TUNA	100.8	0.17	55.6	0.10	0	0	45.2	1.53
SKIPJACK TUNA	4136.0	7.04	4136.0	7.50	0	0	0	0
YELLOWFIN TUNA	5310.6	9.04	5310.6	9.63	0	0	0	0
SAILFISH	1877.0	3.19	1877.0	3.40	0	0	0	0
BLUE MARLIN	10029.3	17.06	10029.3	18.19	0	0	0	0
SHORTBILL SPEARFISH	588.6	1.00	588.6	1.07	0	0	0	0
SHALLOW BOTTOM FISH	117.7	0.20	0	0	72.4	10.32	45.3	1.54
ASSORTED REEF FISH	923.4	1.57	0	0	0	0	923.4	31.32
OCTOPUS	128.3	0.22	0	0	0	0	128.3	4.35
TOTAL ALL SPECIES:	58776.9	100.00	55127.7	93.79	701.3	1.19	2947.8	5.02

IV.51

Table IV.4.5

GUAM DAWR MAY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL	% ALL	% THIS		% THIS		% THIS	
	GEARS	GEARS	TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
SHARKS	338.9	0.78	0	0	0	0	338.9	5.50
SQUIRRELFISH	157.9	0.37	0	0	157.9	2.41	0	0
GROUPE	232.6	0.54	0	0	232.6	3.55	0	0
JACKS	607.9	1.41	0	0	271.1	4.13	336.8	5.47
RAINBOW RUNNER	31.2	0.07	31.2	0.10	0	0	0	0
BIGEYE SCAD (AKULE)	1218.7	2.82	0	0	0	0	1218.7	19.78
DOLPHINFISH (MAHIMAH)	3289.9	7.60	2668.9	8.74	0	0	620.9	10.08
SNAPPERS	433.4	1.00	140.2	0.46	56.9	0.87	236.3	3.83
UKU (JOBFISH)	309.3	0.71	0	0	309.3	4.72	0	0
BLUE LINED SNAPPER	758.7	1.75	0	0	758.7	11.57	0	0
YELLOWTAIL KALIKALI	42.8	0.10	0	0	42.8	0.65	0	0
YELLOW EYE OPAKAPAKA	115.2	0.27	0	0	115.2	1.76	0	0
GINDAI (FLOWER SNAPPER)	65.1	0.15	0	0	65.1	0.99	0	0
EMPERORS	1099.9	2.54	0	0	1083.1	16.52	16.7	0.27
GOATFISH	62.8	0.15	0	0	62.8	0.96	0	0
BARRACUDA	233.6	0.54	0	0	233.6	3.56	0	0
WRASSE	3.3	0.01	0	0	3.3	0.05	0	0
PARROTFISH	764.1	1.77	0	0	0	0	764.1	12.40
SURGEONFISH AND TANGS	21.4	0.05	0	0	0	0	21.4	0.35
RABBITFISH	9.4	0.02	0	0	0	0	9.4	0.15
WAAHOO	5389.8	12.46	5389.8	17.64	0	0	0	0
KAWAKAWA	34.7	0.08	34.7	0.11	0	0	0	0
DOGTOOTH TUNA	85.5	0.20	0	0	85.5	1.30	0	0
SKIPJACK TUNA	7153.2	16.53	6838.2	22.39	0	0	315.0	5.11
YELLOWFIN TUNA	4062.3	9.39	4062.3	13.30	0	0	0	0
SAILFISH	1008.6	2.33	1008.6	3.30	0	0	0	0
BLUE MARLIN	10374.1	23.98	10374.1	33.96	0	0	0	0
TRIGGERFISH	102.7	0.24	0	0	102.7	1.57	0	0
ASSORTED BOTTOM FISH	2434.8	5.63	0	0	2434.8	37.12	0	0
SHALLOW BOTTOM FISH	542.9	1.25	0	0	542.9	8.28	0	0
ASSORTED REEF FISH	1611.0	3.72	0	0	0	0	1611.0	26.15
OCTOPUS	71.6	0.17	0	0	0	0	71.6	1.16
SPINY LOBSTERS	482.4	1.11	0	0	0	0	482.4	7.83
SLIPPER LOBSTERS	26.3	0.06	0	0	0	0	26.3	0.43
CRABS	91.9	0.21	0	0	0	0	91.9	1.49
TOTAL ALL SPECIES:	43267.7	100.00	30547.9	70.60	6558.4	15.16	6161.4	14.24

Table IV.4.6

GUAM DAWR JUNE 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL		% ALL		% THIS		% THIS		% THIS	
	GEARS		GEARS		TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
SHARKS	1784.8		6.14		1784.8	8.21	0	0	0	0
SQUIRRELFISH	195.3		0.67		0	0	195.3	3.21	0	0
GROUPE	875.2		3.01		0	0	815.4	13.41	59.7	4.81
JACKS	608.3		2.09		0	0	453.8	7.46	154.5	12.43
BIGEYE SCAD (AKULE)	696.5		2.40		0	0	0	0	696.5	56.05
DOLPHINFISH (MAHIMAH)	54.7		0.19		54.7	0.25	0	0	0	0
SNAPPERS	233.0		0.80		0	0	216.9	3.57	16.1	1.29
EHU (PINK SNAPPER)	84.4		0.29		0	0	84.4	1.39	0	0
BLUE LINED SNAPPER	105.5		0.36		0	0	105.5	1.73	0	0
YELLOWTAIL KALIKALI	136.1		0.47		0	0	136.1	2.24	0	0
OPAKAPAKA (PINK SNAP)	32.7		0.11		0	0	32.7	0.54	0	0
GINDAI (FLOWER SNAPPER)	128.0		0.44		0	0	128.0	2.10	0	0
SWEETLIPS	5.1		0.02		0	0	0	0	5.1	0.41
EMPERORS	3452.7		11.88		0	0	3452.7	56.77	0	0
GOATFISH	43.3		0.15		0	0	43.3	0.71	0	0
BARRACUDA	100.0		0.34		100.0	0.46	0	0	0	0
WRASSE	39.6		0.14		0	0	0	0	39.6	3.18
PARROTFISH	102.5		0.35		0	0	0	0	102.5	8.24
SURGEONFISH AND TANGS	145.6		0.50		0	0	0	0	145.6	11.71
WAHOO	518.8		1.78		518.8	2.39	0	0	0	0
DOGTUOTH TUNA	23.2		0.08		0	0	0	0	23.2	1.87
SKIPJACK TUNA	8816.6		30.33		8816.6	40.55	0	0	0	0
YELLOWFIN TUNA	7710.5		26.53		7710.5	35.46	0	0	0	0
BLUE MARLIN	2755.8		9.48		2755.8	12.68	0	0	0	0
TRIGGERFISH	58.0		0.20		0	0	58.0	0.95	0	0
ASSORTED BOTTOM FISH	359.3		1.24		0	0	359.3	5.91	0	0
TOTAL ALL SPECIES:	29065.5		100.00		21741.2	74.80	6081.5	20.92	1242.8	4.28

Table IV.4.7

GUAM DAWR JULY 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL	% ALL	% THIS		% THIS		% THIS	
	GEARS	GEARS	TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
GROUPEr	227.9	0.54	0	0	227.9	25.70	0	0
JACKS	119.4	0.29	27.0	0.07	92.4	10.42	0	0
RAINBOW RUNNER	155.7	0.37	155.7	0.40	0	0	0	0
BIGEYE SCAD (AKULE)	342.8	0.82	0	0	0	0	342.8	21.19
DOLPHINFISH (MAHIMAHl)	538.0	1.29	538.0	1.37	0	0	0	0
SNAPPERS	6.0	0.01	0	0	0	0	6.0	0.37
BLUE LINED SNAPPER	40.1	0.10	0	0	0	0	40.1	2.48
EMPERORS	470.0	1.12	0	0	456.8	51.51	13.2	0.81
GOATFISH	109.7	0.26	0	0	109.7	12.37	0	0
BARRACUDA	2117.4	5.06	2117.4	5.38	0	0	0	0
WRASSE	20.2	0.05	0	0	0	0	20.2	1.25
PARROTFISH	357.2	0.85	0	0	0	0	357.2	22.08
SURGEONFISH AND TANGS	8.6	0.02	0	0	0	0	8.6	0.53
TUNAS	18.0	0.04	18.0	0.05	0	0	0	0
WAHOO	692.7	1.66	692.7	1.76	0	0	0	0
SKIPJACK TUNA	6798.4	16.24	6798.4	17.28	0	0	0	0
YELLOWFIN TUNA	6246.9	14.93	6246.9	15.88	0	0	0	0
BLUE MARLIN	22639.8	54.10	22639.8	57.54	0	0	0	0
ASSORTED TROLLING FISH	112.7	0.27	112.7	0.29	0	0	0	0
ASSORTED REEF FISH	829.6	1.98	0	0	0	0	829.6	51.28
TOTAL ALL SPECIES:	41851.1	100.00	39346.6	94.02	886.8	2.12	1617.7	3.87

IV.54

Table IV.4.8

GUAM DAWR AUGUST 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS		% THIS		% THIS	
			TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
SHARKS	782.9	3.46	0	0	0	0	782.9	12.31
LIZARDFISH	0.5	0	0	0	0.5	0.01	0	0
SQUIRRELFISH	266.1	1.18	0	0	194.5	3.76	71.7	1.13
SCORPIONFISH	11.4	0.05	0	0	11.4	0.22	0	0
GROUPE	560.6	2.48	0	0	560.6	10.85	0	0
BIGEYES	1.1	0	0	0	0	0	1.1	0.02
FALSE WHITING	5.2	0.02	0	0	5.2	0.10	0	0
JACKS	1233.5	5.45	251.7	2.26	853.7	16.53	128.1	2.01
RAINBOW RUNNER	535.0	2.36	535.0	4.81	0	0	0	0
BIGEYE SCAD (AKULE)	2925.4	12.92	0	0	0	0	2925.4	46.01
SNAPPERS	230.7	1.02	61.4	0.55	66.8	1.29	102.5	1.61
LEHI (SILVERMOUTH)	62.2	0.27	0	0	62.2	1.20	0	0
UKU (JOBFISH)	283.9	1.25	0	0	283.9	5.50	0	0
EHU (PINK SNAPPER)	94.6	0.42	0	0	94.6	1.83	0	0
ONAGA (RED SNAPPER)	90.8	0.40	0	0	90.8	1.76	0	0
BLUE LINED SNAPPER	195.4	0.86	0	0	190.3	3.68	5.1	0.08
YELLOWTAIL KALIKALI	31.1	0.14	0	0	31.1	0.60	0	0
OPAKAPAKA (PINK SNAP)	233.4	1.03	0	0	233.4	4.52	0	0
YELLOW EYE OPAKAPAKA	88.2	0.39	0	0	88.2	1.71	0	0
GINDAI (FLOWER SNAPPER)	108.9	0.48	0	0	108.9	2.11	0	0
EMPERORS	1463.6	6.46	0	0	1365.2	26.43	98.4	1.55
GOATFISH	94.5	0.42	0	0	48.2	0.93	46.3	0.73
SWEEPERS	5.5	0.02	0	0	0	0	5.5	0.09
RUDDERFISH	208.3	0.92	0	0	0	0	208.3	3.28
BARRACUDA	277.2	1.22	193.0	1.74	0	0	84.2	1.33
WRASSE	10.2	0.05	6.3	0.06	3.9	0.08	0	0
PARROTFISH	270.1	1.19	0	0	0	0	270.1	4.25
SURGEONFISH AND TANGS	408.1	1.80	0	0	19.4	0.38	388.7	6.11
RABBITFISH	14.4	0.06	0	0	0	0	14.4	0.23
WAHOO	1708.6	7.55	1708.6	15.37	0	0	0	0
KAWAKAWA	420.5	1.86	396.1	3.56	24.4	0.47	0	0
DOGTUOTH TUNA	859.8	3.80	0	0	252.4	4.89	607.4	9.55
SKIPJACK TUNA	3147.1	13.90	3147.1	28.31	0	0	0	0
YELLOWFIN TUNA	1926.1	8.51	1926.1	17.33	0	0	0	0
BLUE MARLIN	2891.0	12.77	2891.0	26.01	0	0	0	0
TRIGGERFISH	111.0	0.49	0	0	111.0	2.15	0	0
ASSORTED BOTTOM FISH	324.1	1.43	0	0	324.1	6.27	0	0
SHALLOW BOTTOM FISH	43.6	0.19	0	0	43.6	0.84	0	0
DEEP BOTTOM FISH	97.2	0.43	0	0	97.2	1.88	0	0
ASSORTED REEF FISH	218.3	0.96	0	0	0	0	218.3	3.43
OCTOPUS	214.6	0.95	0	0	0	0	214.6	3.38
SPINY LOBSTERS	163.3	0.72	0	0	0	0	163.3	2.57
SLIPPER LOBSTERS	21.5	0.09	0	0	0	0	21.5	0.34
TOTAL ALL SPECIES:	22639.8	100.00	11116.4	49.10	5165.6	22.82	6357.8	28.08

Table IV.4.9

GUAM DAWR SEPTEMBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL	% ALL	% THIS		% THIS	
	GEARS	GEARS	TROLLING	GEAR	BOTTOM	GEAR
SHARKS	35.0	0.23	0	0	35.0	7.50
GROUPE	30.1	0.20	0	0	30.1	6.45
JACKS	33.2	0.22	0	0	33.2	7.12
RAINBOW RUNNER	136.2	0.89	136.2	0.92	0	0
DOLPHINFISH (MAHIMAH)	47.8	0.31	47.8	0.32	0	0
SNAPPERS	29.7	0.19	0	0	29.7	6.37
EHU (PINK SNAPPER)	9.3	0.06	0	0	9.3	1.99
YELLOWTAIL KALIKALI	26.6	0.17	0	0	26.6	5.70
GINDAI (FLOWER SNAPPER)	6.6	0.04	0	0	6.6	1.42
EMPERORS	242.2	1.58	0	0	242.2	51.95
GOATFISH	1.9	0.01	0	0	1.9	0.41
BARRACUDA	430.2	2.80	430.2	2.89	0	0
WAHOO	1565.4	10.20	1565.4	10.52	0	0
KAWAKAWA	219.9	1.43	219.9	1.48	0	0
DOGTUOTH TUNA	191.2	1.25	191.2	1.28	0	0
SKIPJACK TUNA	3637.4	23.70	3637.4	24.44	0	0
YELLOWFIN TUNA	1751.8	11.41	1751.8	11.77	0	0
SAILFISH	757.6	4.94	757.6	5.09	0	0
BLUE MARLIN	6146.8	40.04	6146.8	41.30	0	0
TRIGGERFISH	51.7	0.34	0	0	51.7	11.09
TOTAL ALL SPECIES:	15350.7	100.00	14884.3	96.96	466.3	3.04

Table IV.4.10

GUAM DAWR OCTOBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS		% THIS		% THIS	
			TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
SHARKS	792.6	3.69	0	0	792.6	18.46	0	0
SQUIRRELFISH	218.9	1.02	0	0	215.2	5.01	3.7	0.25
GROUPE	353.0	1.64	0	0	353.0	8.22	0	0
BIGEYES	25.3	0.12	0	0	25.3	0.59	0	0
JACKS	383.3	1.78	0	0	44.6	1.04	338.7	23.21
RAINBOW RUNNER	41.9	0.20	41.9	0.27	0	0	0	0
SNAPPERS	100.3	0.47	0	0	100.3	2.34	0	0
LEHI (SILVERMOUTH)	326.9	1.52	0	0	326.9	7.62	0	0
UKU (JOBFISH)	242.7	1.13	0	0	242.7	5.65	0	0
EHU (PINK SNAPPER)	34.7	0.16	0	0	34.7	0.81	0	0
BLUE LINED SNAPPER	36.2	0.17	0	0	36.2	0.84	0	0
YELLOWTAIL KALIKALI	59.2	0.28	0	0	59.2	1.38	0	0
YELLOWWEY OPAKAPAKA	32.2	0.15	0	0	32.2	0.75	0	0
GINDAI (FLOWER SNAPPER)	29.7	0.14	0	0	29.7	0.69	0	0
EMPERORS	588.5	2.74	0	0	588.5	13.71	0	0
GOATFISH	49.4	0.23	0	0	4.5	0.10	44.9	3.08
RUDDERFISH	172.1	0.80	0	0	0	0	172.1	11.79
BARRACUDA	275.2	1.28	275.2	1.75	0	0	0	0
WRASSE	12.4	0.06	0	0	12.4	0.29	0	0
PARROTFISH	665.5	3.10	0	0	0	0	665.5	45.60
SURGEONFISH AND TANGS	219.5	1.02	0	0	49.5	1.15	169.9	11.64
WAHOO	6455.9	30.06	6455.9	41.06	0	0	0	0
DOGTUOTH TUNA	259.5	1.21	259.5	1.65	0	0	0	0
SKIPJACK TUNA	4885.8	22.75	4885.8	31.07	0	0	0	0
YELLOWFIN TUNA	1106.1	5.15	1106.1	7.03	0	0	0	0
SAILFISH	865.0	4.03	865.0	5.50	0	0	0	0
BLUE MARLIN	1834.8	8.54	1834.8	11.67	0	0	0	0
TRIGGERFISH	34.4	0.16	0	0	34.4	0.80	0	0
SHALLOW BOTTOM FISH	97.8	0.46	0	0	97.8	2.28	0	0
DEEP BOTTOM FISH	1213.7	5.65	0	0	1213.7	28.27	0	0
ASSORTED REEF FISH	64.7	0.30	0	0	0	0	64.7	4.43
TOTAL ALL SPECIES:	21477.3	100.00	15724.3	73.21	4293.4	19.99	1459.5	6.80

Table IV.4.11

GUAM DAWR NOVEMBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL	% ALL	% THIS		% THIS		% THIS	
	GEARS	GEARS	TROLLING	GEAR	BOTTOM	GEAR	OTHER	GEAR
SHARKS	585.2	1.23	585.2	1.66	0	0	0	0
SQUIRRELFISH	315.8	0.67	0	0	218.9	3.17	96.8	1.81
GROUPE	1723.3	3.63	0	0	1500.8	21.74	222.5	4.15
BIGEYES	12.1	0.03	0	0	12.1	0.17	0	0
JACKS	1412.7	2.98	0	0	273.6	3.96	1139.1	21.25
BIGEYE SCAD (AKULE)	3094.0	6.52	0	0	0	0	3094.0	57.73
DOLPHINFISH (MAHIMAH)	2860.4	6.03	2860.4	8.13	0	0	0	0
SNAPPERS	595.2	1.25	0	0	562.3	8.14	32.9	0.61
LEHI (SILVERMOUTH)	18.1	0.04	0	0	18.1	0.26	0	0
UKU (JOB FISH)	153.6	0.32	0	0	153.6	2.23	0	0
EHU (PINK SNAPPER)	123.5	0.26	0	0	123.5	1.79	0	0
ONAGA (RED SNAPPER)	658.4	1.39	0	0	658.4	9.54	0	0
BLUE LINED SNAPPER	151.4	0.32	0	0	151.4	2.19	0	0
YELLOWTAIL KALIKALI	98.8	0.21	0	0	98.8	1.43	0	0
GINDAI (FLOWER SNAPPER)	277.1	0.58	0	0	277.1	4.01	0	0
EMPERORS	2509.6	5.29	0	0	2500.9	36.22	8.8	0.16
GOAT FISH	45.4	0.10	0	0	35.7	0.52	9.7	0.18
SWEEPERS	7.7	0.02	0	0	7.7	0.11	0	0
RUDDER FISH	16.4	0.03	0	0	0	0	16.4	0.31
HAWK FISH	6.0	0.01	0	0	6.0	0.09	0	0
BARRACUDA	819.3	1.73	819.3	2.33	0	0	0	0
WRASSE	54.8	0.12	0	0	46.6	0.68	8.1	0.15
PARROT FISH	574.4	1.21	0	0	0	0	574.4	10.72
SURGEON FISH AND TANGS	78.4	0.17	0	0	0	0	78.4	1.46
WAHOO	25002.9	52.69	25002.9	71.04	0	0	0	0
KAWAKAWA	182.9	0.39	182.9	0.52	0	0	0	0
DOGT OOTH TUNA	1159.5	2.44	1159.5	3.29	0	0	0	0
SKIPJACK TUNA	2567.8	5.41	2567.8	7.30	0	0	0	0
YELLOWFIN TUNA	991.3	2.09	991.3	2.82	0	0	0	0
BLUE MARLIN	1024.2	2.16	1024.2	2.91	0	0	0	0
TRIGGER FISH	66.4	0.14	0	0	66.4	0.96	0	0
SHALLOW BOTTOM FISH	192.0	0.40	0	0	192.0	2.78	0	0
ASSORTED REEF FISH	78.6	0.17	0	0	0	0	78.6	1.47
TOTAL ALL SPECIES:	47457.1	100.00	35193.5	74.16	6903.8	14.55	5359.8	11.29

Table IV.4.12

GUAM DAWR DECEMBER 1987
OFFSHORE CREEL SURVEY SPECIES COMPOSITION

COMMON NAME	TOTAL ALL GEARS	% ALL GEARS	% THIS TROLLING GEAR		% THIS BOTTOM GEAR		% THIS OTHER GEAR	
MORAY EELS	2.1	0.01	0	0	2.1	0.33	0	0
NEEDLEFISH	68.8	0.28	68.8	0.31	0	0	0	0
SQUIRRELFISH	44.3	0.18	0	0	32.2	5.20	12.1	0.71
GROUPE	144.3	0.59	0	0	25.6	4.13	118.7	6.98
BIGEYES	7.2	0.03	0	0	7.2	1.17	0	0
JACKS	310.5	1.27	13.8	0.06	0	0	296.7	17.45
RAINBOW RUNNER	357.6	1.46	357.6	1.61	0	0	0	0
DOLPHINFISH (MAHIMAH)	6207.1	25.31	6207.1	27.95	0	0	0	0
SNAPPERS	92.1	0.38	0	0	7.2	1.17	84.8	4.99
LEHI (SILVERMOUTH)	6.8	0.03	0	0	6.8	1.10	0	0
EHU (PINK SNAPPER)	62.1	0.25	0	0	62.1	10.03	0	0
BLUE LINED SNAPPER	113.8	0.46	0	0	113.8	18.40	0	0
YELLOWTAIL KALIKALI	91.6	0.37	0	0	91.6	14.80	0	0
OPAKAPAKA (PINK SNAP)	18.6	0.08	0	0	18.6	3.00	0	0
YELLOW EYE OPAKAPAKA	129.3	0.53	0	0	129.3	20.90	0	0
GINDAI (FLOWER SNAPPER)	7.2	0.03	0	0	7.2	1.17	0	0
SWEETLIPS	96.1	0.39	0	0	0	0	96.1	5.65
EMPERORS	82.9	0.34	0	0	82.9	13.40	0	0
GOATFISH	26.6	0.11	0	0	26.6	4.30	0	0
RUDDERFISH	320.5	1.31	0	0	0	0	320.5	18.85
BARRACUDA	543.3	2.22	543.3	2.45	0	0	0	0
WRASSE	58.5	0.24	0	0	0	0	58.5	3.44
PARROTFISH	617.7	2.52	0	0	0	0	617.7	36.32
SURGEONFISH AND TANGS	95.3	0.39	0	0	0	0	95.3	5.60
Wahoo	9195.4	37.49	9195.4	41.41	0	0	0	0
KAWAKAWA	165.1	0.67	165.1	0.74	0	0	0	0
DOGTUOTH TUNA	436.7	1.78	436.7	1.97	0	0	0	0
SKIPJACK TUNA	1468.4	5.99	1468.4	6.61	0	0	0	0
YELLOWFIN TUNA	2929.9	11.95	2929.9	13.19	0	0	0	0
SAILFISH	601.8	2.45	601.8	2.71	0	0	0	0
SHORTBILL SPEARFISH	220.1	0.90	220.1	0.99	0	0	0	0
TRIGGERFISH	5.6	0.02	0	0	5.6	0.90	0	0
TOTAL ALL SPECIES:	24527.1	100.00	22207.9	90.54	618.7	2.52	1700.5	6.93

Table IV.5.1

**1987 MARIANAS FISHING DERBY
SUMMARY REPORTS**

PREPARED BY
GUAM DIVISION OF AQUATIC & WILDLIFE RESOURCES

DERBY TOTALS

	DAY 1 JUL 18	DAY 2 JUL 19	DAY 3 JUL 20	DERBY TOTALS
NUMBER OF BOATS	63.0	97.0	58.0	218.0
NUMBER OF FISHERMEN	148.0	263.0	156.0	567.0
AVE. MEN PER BOAT	2.4	2.7	2.9	2.7
NUMBER OF LINES FISHED*	277.0	419.0	272.0	965.0
AVE. LINES PER BOAT	0	4.3	4.1	4.4
BOAT HOURS	693.4	938.0	474.9	2107.2
FISHED HOURS	660.9	886.6	444.1	1868.9
AVG. BOAT TRIP LENGTH**	11.0	9.7	8.2	9.7
AVG. TIME SPENT FISHING	10.5	9.1	7.7	9.1
FISHERMAN HOURS	1631.6	2542.0	1353.6	5527.2
LINE HOURS	2910.6	3812.9	2094.4	8817.9
NUMBER OF FISH LANDED	176.0	236.0	241.0	653.0
POUNDS LANDED	6201.4	6897.8	1601.9	14701.0
AVE CATCH PER BOAT DAY	98.3	71.2	27.6	67.2
AVE CATCH PER BOAT HOUR	8.9	7.4	3.4	7.0
AVE CATCH PER MAN HOUR	3.8	2.7	1.2	2.7
AVE CATCH PER LINE HOUR	2.1	1.8	0.8	1.7

SPECIES TOTALS

SPECIES	DAY 1 - JUL 18			DAY 2 - JUL 19			DAY 3 - JUL 20			TOTAL		
	NUMBER CAUGHT	TOTAL WT-LBS	AVE WT.	NUMBER CAUGHT	TOTAL WT-LBS	AVE WT.	NUMBER CAUGHT	TOTAL WT-LBS	AVE WT.	NUMBER CAUGHT	TOTAL WT-LBS	AVE WT.
MARLIN	18	3803.4	211.3	20	4073.7	203.7	5	959.7	191.9	43	8836.7	205.5
YELLOWFIN TUNA	64	1019.4	15.9	35	713.4	20.4	17	159.6	9.4	116	1892.4	16.3
WAHOO	16	386.7	24.2	9	180.6	20.1	6	125.4	20.9	31	692.7	22.3
MAHIMAH	1	34.4	34.4	2	54.0	27.0	0	0	0	3	88.4	29.5
SKIPJACK TUNA	42	451.5	10.8	36	388.0	10.8	32	221.8	6.9	110	1061.3	9.6
RAINBOW RUNNER	7	28.0	4.0	4	13.4	3.4	2	13.0	6.5	13	54.5	4.2
BARRACUDA	28	478.0	17.1	119	1366.9	11.5	11	117.5	10.7	158	1962.3	12.4
OTHER	0	0	0	11	107.8	9.8	3	4.9	1.6	14	112.7	8.0
TOTALS	176	6201.4	35.2	236	6897.8	29.2	76	1601.9	21.1	488	14701.0	30.1

* Artificial data based on the overall average lines per boat.

** Assumes one trip per day since calculation of number of boat trips per day was not possible.

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Table IV.6.1

GUAM DAWR 1987 ANNUAL
DAY INSHORE CREEL SURVEY
EXPANSION SUMMARY

METHODS	PRSN CNT	CV	GEAR CNT	CV	TRIP CNT	CV	PRNS HRS	CV	GEAR HRS	CV	CATCH	CV	CPUE
HOOK & LINE	20459.8	9	19809.2	8	15150.4	11	79482.4	8	77277.8	8	49847.0	4	.65
CAST NET	6424.1	14	5518.3	14	5207.5	14	18119.0	14	15569.4	14	16972.3	14	1.09
GILL NET	7826.1	9	4098.9	9	4098.9	9	41509.5	9	21919.8	10	61802.1	10	2.82
SURROUND NET	1533.3	24	317.6	24	317.6	24	9553.6	24	1977.6	24	12818.1	24	6.48
SPEAR-SNORKEL	1435.2	21	1109.7	21	408.8	21	4693.9	22	3601.7	21	10441.0	21	2.90
SPEAR-SCUBA	27.0	100	13.5	100	13.5	100	27.0	100	13.5	100	41.7	100	3.09
HOOK & GAFF	902.2	31	1553.8	31	378.2	32	2653.2	31	4569.3	31	3289.4	31	.72
DRAG NET	74.4	71	20.3	75	20.3	75	253.5	71	75.9	80	786.2	80	10.36
OTHER	819.9	31	819.9	31	819.9	31	3648.5	31	3648.5	31	11663.0	31	3.20
TOTALS	39502.0	6	33261.2	6	21290.4	6	147214.0	6	122229.2	6	167660.7	6	1.33

Table IV.6.2

GUAM DAWR 1987 ANNUAL
NIGHT INSHORE CREEL SURVEY
EXPANSION SUMMARY

METHODS	PRSN CNT	CV	GEAR CNT	CV	TRIP CNT	CV	PRNS HRS	CV	GEAR HRS	CV	CATCH	CV	CPUE
HOOK & LINE	6444.7	9	6951.5	9	3755.7	15	18906.8	9	20412.4	9	6866.4	4	.34
CAST NET	201.6	38	194.7	38	133.4	43	487.7	40	473.9	41	558.9	66	2.20
GILL NET	2942.3	9	1294.0	9	1294.0	9	11950.2	9	5263.1	9	11730.0	9	2.23
SURROUND NET	26.0	100	6.5	100	6.5	100	26.0	100	6.5	100	14.3	100	2.20
SPEAR-SNORKEL	2931.3	13	2781.3	13	790.8	13	11660.0	13	11077.2	13	19488.4	13	1.76
SPEAR-SCUBA	38.6	70	38.6	70	14.4	70	162.0	70	162.0	70	818.0	70	5.05
HOOK & GAFF	62.0	100	49.6	100	14.2	100	161.2	100	129.0	100	71.9	100	.56
DRAG NET	2256.9	29	379.8	29	333.2	28	7395.1	29	1246.8	29	4799.2	29	3.85
OTHER	967.1	24	967.1	24	484.9	25	3254.7	23	3254.7	23	4917.1	30	3.20
TOTALS	15870.4	6	12663.1	6	6476.9	6	60768.4	6	45246.4	6	49264.1	6	1.70

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Table IV.7.1

GUAM DAWR 1987 ANNUAL
DAY INSHORE CREEL SURVEY
SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
NEEDLEFISH	970.0	0.58	SQUIRRELFISH	1636.3	0.98
JACKS	25997.9	15.51	BIGEYE SCAD (AKULE)	2504.3	1.49
SNAPPERS	5828.1	3.48	BREAM	841.1	0.50
MOHARRA	7483.3	4.46	SWEETLIPS	653.1	0.39
EMPERORS	3624.1	2.16	GOATFISH	18572.4	11.08
SWEEPERS	78.6	0.05	RUDDERFISH	4448.5	2.65
DAMSELFISHES	449.0	0.27	MULLET	23439.0	13.98
WRASSE	220.0	0.13	PARROTFISH	387.6	0.23
SURGEONFISH AND TANGS	37922.3	22.62	RABBITFISH	9372.9	5.59
FLOUNDER	708.5	0.42	TRIGGERFISH	359.2	0.21
UNIDENTIFIED FISH	11704.6	6.98	MOLLUSKS	10.4	0.01
OCTOPUS	7224.8	4.31	SPINY LOBSTERS	2200.3	1.31
CRABS	1024.5	0.61			
TOTAL ALL SPECIES:	167660.7	100.00			

Table IV.7.2

GUAM DAWR 1987 ANNUAL
NIGHT INSHORE CREEL SURVEY
SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
NEEDLEFISH	175.5	0.36	HALFBEAK	4.9	0.01
SQUIRRELFISH	1585.3	3.22	GROUPE	271.4	0.55
JACKS	2341.1	4.75	BIGEYE SCAD (AKULE)	2270.4	4.61
PONYFISHES	102.7	0.21	SNAPPERS	3776.3	7.67
BREAM	823.8	1.67	MOHARRA	32.3	0.07
EMPERORS	2143.0	4.35	GOATFISH	5680.1	11.53
RUDDERFISH	978.4	1.99	DAMSELFISHES	22.4	0.05
MULLET	3910.1	7.94	WRASSE	517.0	1.05
PARROTFISH	1087.2	2.21	SURGEONFISH AND TANGS	11981.8	24.32
RABBITFISH	2595.2	5.27	FLOUNDER	279.4	0.57
TRIGGERFISH	147.4	0.30	FILEFISH	52.4	0.11
PORCUPINEFISH	133.0	0.27	UNIDENTIFIED FISH	1391.2	2.82
OCTOPUS	716.4	1.45	SPINY LOBSTERS	5397.2	10.96
SLIPPER LOBSTERS	847.9	1.72			
TOTAL ALL SPECIES:	49264.1	100.00			

Table IV.7.3

GUAM DAWR 1987 ANNUAL
COMBINED DAY AND NIGHT INSHORE CREEL SURVEY
SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
NEEDLEFISH	1145.6	0.53	HALFBEAK	4.9	0
SQUIRRELFISH	3221.6	1.49	GROUPE	271.4	0.13
JACKS	28339.0	13.06	BIGEYE SCAD (AKULE)	4774.7	2.20
PONYFISHES	102.7	0.05	SNAPPERS	9604.3	4.43
BREAM	1664.9	0.77	MOHARRA	7515.6	3.46
SWEETLIPS	653.1	0.30	EMPERORS	5767.1	2.66
GOATFISH	24252.5	11.18	SWEEPERS	78.6	0.04
RUDDERFISH	5426.9	2.50	DAMSELFISHES	471.5	0.22
MULLET	27349.0	12.61	WRASSE	737.1	0.34
PARROTFISH	1474.8	0.68	SURGEONFISH AND TANGS	49904.2	23.01
RABBITFISH	11968.1	5.52	FLOUNDER	987.8	0.46
TRIGGERFISH	506.7	0.23	FILEFISH	52.4	0.02
PORCUPINEFISH	133.0	0.06	UNIDENTIFIED FISH	13095.8	6.04
MOLLUSKS	10.4	0	OCTOPUS	7941.2	3.66
SPINY LOBSTERS	7597.5	3.50	SLIPPER LOBSTERS	847.9	0.39
CRABS	1024.5	0.47			
TOTAL ALL SPECIES:	216924.8	100.00			

Table IV.7.4

GUAM DAWR 1987 ANNUAL
COMBINED OFFSHORE AND INSHORE CREEL SURVEY
SPECIES COMPOSITION

COMMON NAME	TOTAL POUNDS	% SP. COMP.	COMMON NAME	TOTAL POUNDS	% SP. COMP.
SHARKS	5534.4	0.85	MORAY EELS	3.0	0
LIZARDFISH	0.6	0	NEEDLEFISH	1244.5	0.19
HALFBEAK	4.9	0	SQUIRRELFISH	4559.5	0.70
SCORPIONFISH	13.2	0	GROUPE	5333.5	0.82
BIGEYES	49.1	0.01	FALSE WHITING	6.0	0
JACKS	33670.1	5.19	RAINBOW RUNNER	1517.8	0.23
BIGEYE SCAD (AKULE)	12587.7	1.94	DOLPHINFISH (MAHIMAH)	86361.8	13.32
PONYFISHES	102.7	0.02	SNAPPERS	11425.4	1.76
LEHI (SILVERMOUTH)	513.4	0.08	UKU (JOBFISH)	1050.2	0.16
EHU (PINK SNAPPER)	433.6	0.07	ONAGA (RED SNAPPER)	465.1	0.07
BLUE LINED SNAPPER	1472.4	0.23	YELLOWTAIL KALIKALI	554.2	0.09
OPAKAPAKA (PINK SNAP)	339.1	0.05	YELLOW EYE OPAKAPAKA	434.2	0.07
GINDAI (FLOWER SNAPPER)	649.0	0.10	BREAM	1664.9	0.26
MOHARRA	7515.6	1.16	SWEETLIPS	1199.4	0.19
EMPERORS	17831.9	2.75	GOATFISH	24860.5	3.83
SWEEPERS	90.0	0.01	RUDDERFISH	6575.6	1.01
BATFISH	37.8	0.01	DAMSELFISHES	471.5	0.07
HAWKFISH	3.3	0	MULLET	27349.0	4.22
BARRACUDA	8118.2	1.25	WRASSE	1067.0	0.16
PARROTFISH	6282.9	0.97	SURGEONFISH AND TANGS	51292.6	7.91
RABBITFISH	12041.6	1.86	TUNAS	28.0	0
WAHOO	82891.7	12.79	KAWAKAWA	1508.7	0.23
DOGTUOTH TUNA	3706.3	0.57	SKIPJACK TUNA	59228.0	9.14
YELLOWFIN TUNA	41753.8	6.44	SAILFISH	5912.8	0.91
BLUE MARLIN	73169.3	11.29	SHORTBILL SPEARFISH	855.2	0.13
FLOUNDER	987.8	0.15	TRIGGERFISH	1004.5	0.15
FILEFISH	52.4	0.01	PORCUPINEFISH	133.0	0.02
ASSORTED BOTTOM FISH	3161.3	0.49	SHALLOW BOTTOM FISH	990.5	0.15
DEEP BOTTOM FISH	1612.8	0.25	ASSORTED TROLLING FISH	121.7	0.02
ASSORTED REEF FISH	4661.7	0.72	UNIDENTIFIED FISH	13095.8	2.02
MOLLUSKS	10.4	0	OCTOPUS	8463.0	1.31
SPINY LOBSTERS	8207.3	1.27	SLIPPER LOBSTERS	896.5	0.14
CRABS	1124.7	0.17			
TOTAL ALL SPECIES:	648295.4	100.00			

Figure IV.5.1

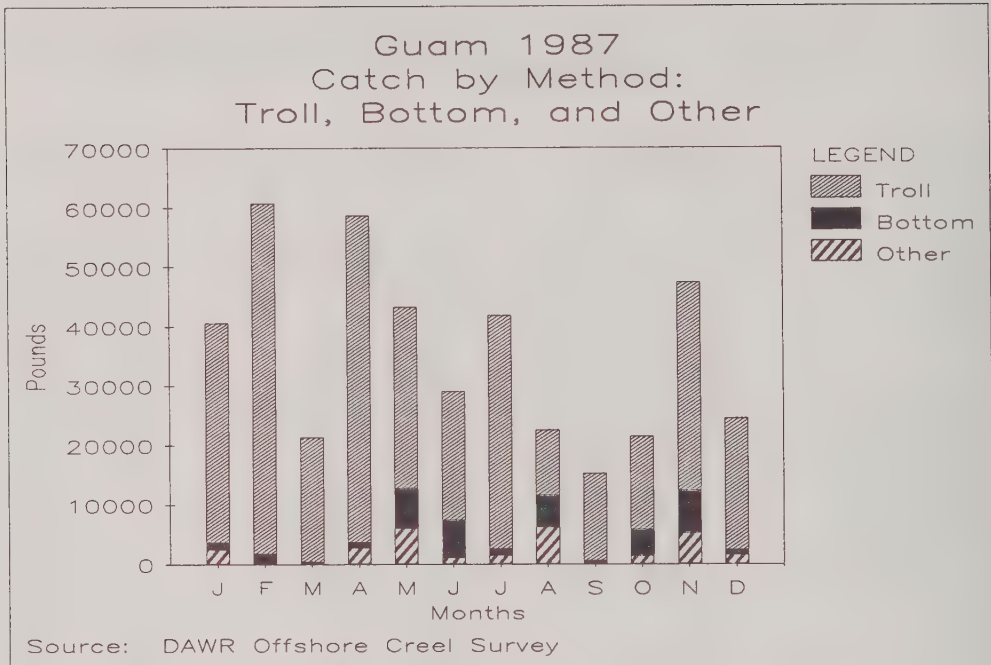


Figure IV.5.2

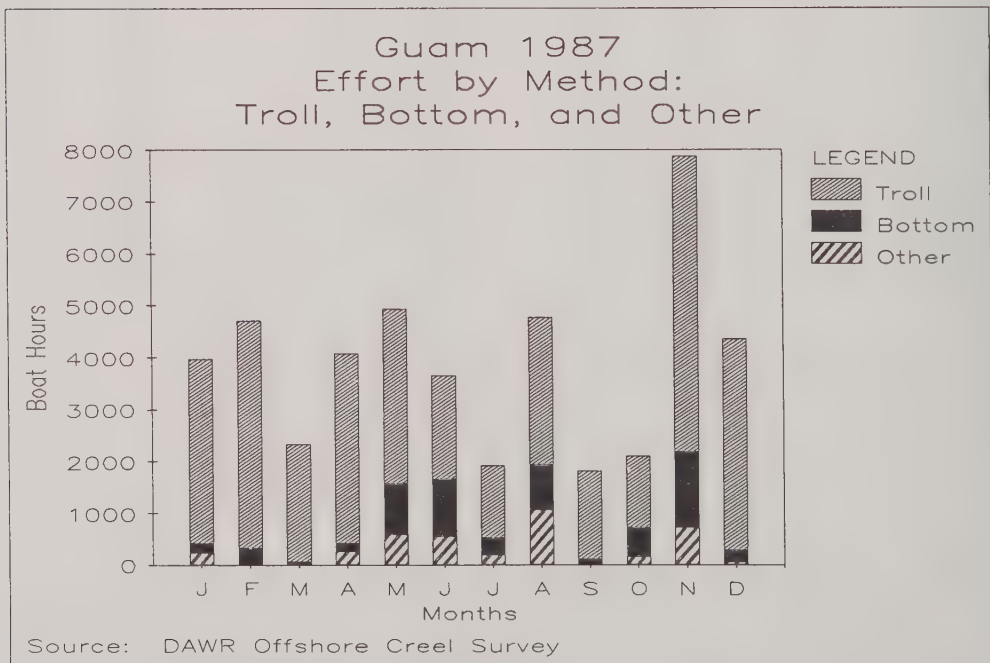


Figure IV.6.1

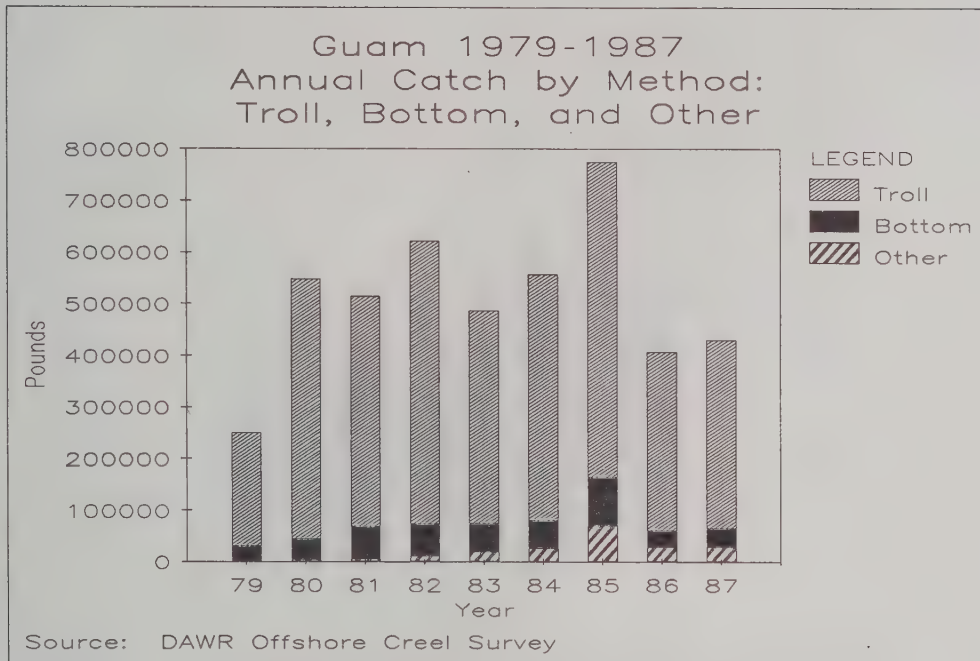


Figure IV.6.2

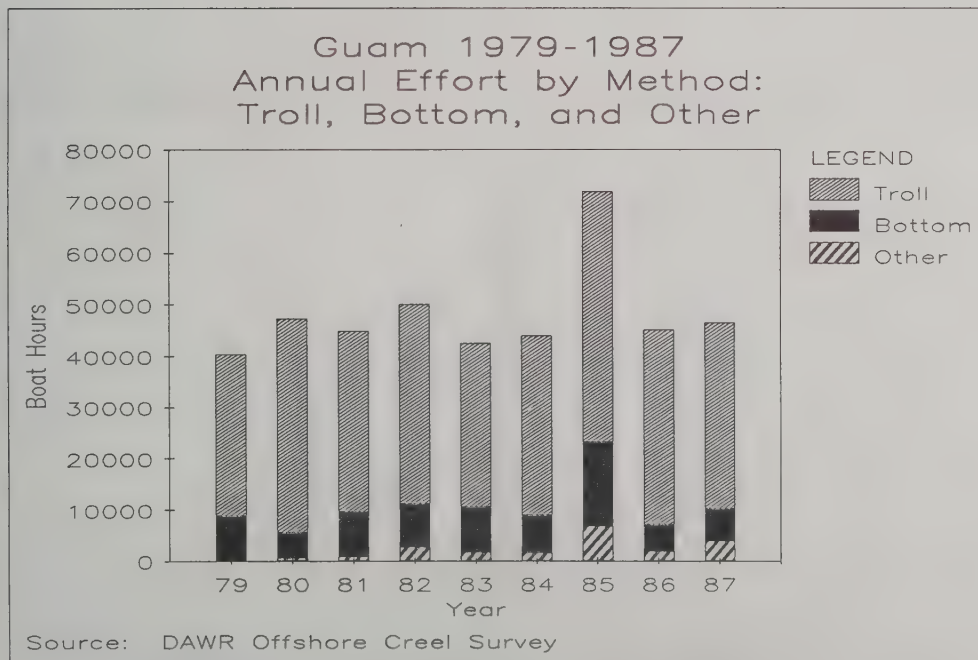


Figure IV.7.1

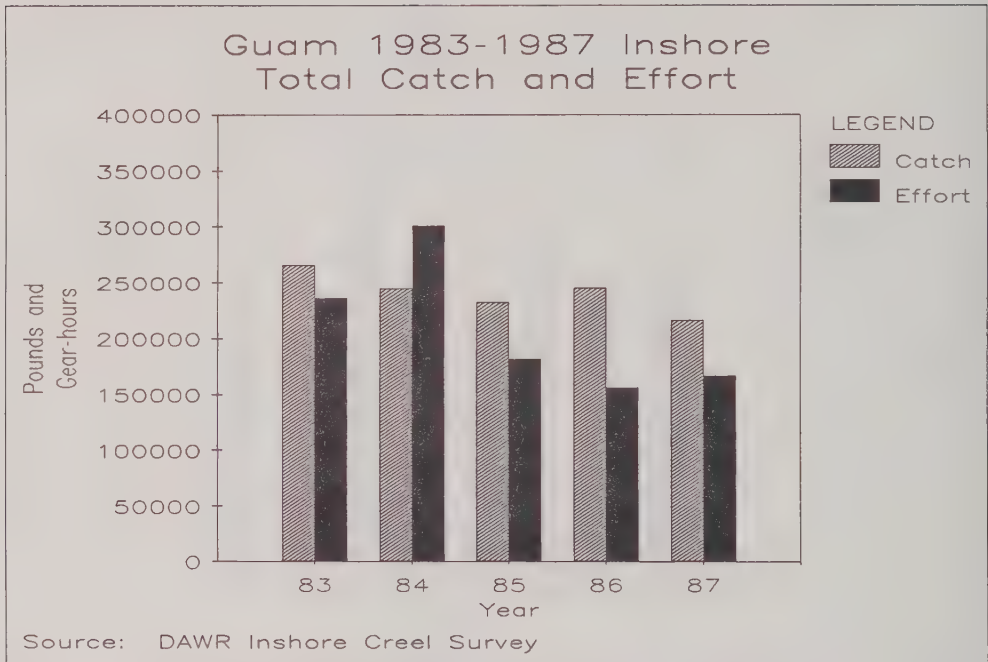
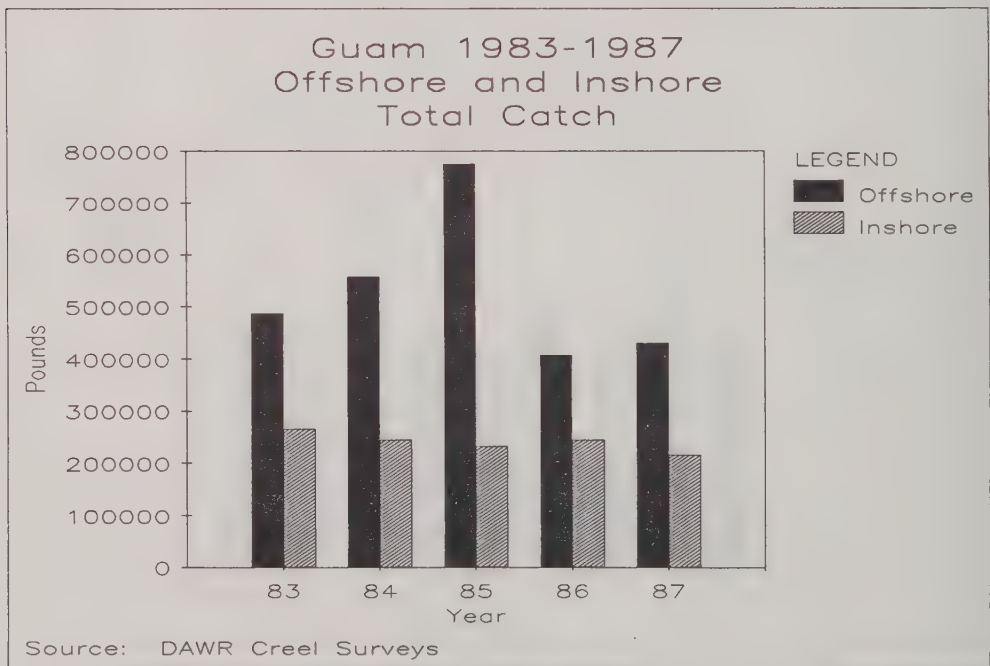


Figure IV.7.2





HAU



KAHOOLAWE



State of Hawaii

1987 Fishery Statistics

STATE OF HAWAII 1987 FISHERY STATISTICS

Compiled By

Division of Aquatic Resources

and the

Western Pacific Fishery Information Network

January 1989

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STATE OF HAWAII 1987 FISHERY STATISTICS

INTRODUCTION

The Hawaiian Archipelago stretches northwestward over 1,500 miles, from about lat. 19°N and long. 155°W to about lat. 28°N and long. 178°W. The seven main Hawaiian Islands--Hawaii, Maui, Lanai, Molokai, Oahu, Kauai, and Niihau--comprise over 99% of the total land area and have virtually all of the State's population of approximately 1 million residents. Over half of the State's commercial fish catch is landed on Oahu and about a third on Hawaii. The Department of Land and Natural Resources' Division of Aquatic Resources (DAR) has been collecting statistics on the commercial fisheries of Hawaii for over 40 years. Volumes I and III of this series contained monthly and annual summary statistics and numerous graphs on commercial landings for calendar years 1979 through 1986. Volume IV presents similar monthly and annual reports and graphs for 1987 data and includes updates of seasonality and time-series graphs based on 1979-87 data.

The fisheries of the State of Hawaii are quite diverse and vary from hand harvesting algae to large vessel fisheries, such as longlining and lobster fishing. The major fisheries include tuna fishing using several methods, lobster trapping, hook-and-line bottom fishing for the grouper-snapper-jack complex, net fishing for such species as the bigeye scad, and trolling for such pelagic species as marlin, wahoo, and mahimahi. Of the approximately 15,000 vessels in Hawaii, about 80% are pleasure boats, 10% commercial fishing or charter boats, and the remainder are registered in other categories. The pleasure category includes boats used for recreational, subsistence, and part-time commercial fishing as well as boats not typically used for fishing such as sailboats. To fish commercially (i.e., sell catches or provide charter fishing services) in Hawaii requires purchase of a commercial marine fishing license. There are currently about 2,500 licensed commercial fishermen in the State. Substantial subsistence and recreational fisheries, which are primarily small boat, one-day fisheries, also exist. Data provided in this document are from licensed commercial fishermen only.

DATA COLLECTING SYSTEM

The major data collecting system used by DAR is based on a State law that requires commercial fishermen to report their catches on a monthly basis. Several different data collection forms are used because of the diversity of fishing methods and a desire to obtain specific information on some of these methods.

The vast majority of commercial fishermen use the standard C-3 Fish Catch Report, which is submitted each month and requires the following information for each trip taken:

- Fisherman's name and commercial license number
- Boat's name and its registration number
- Date
- Area or buoy fished
- Type of gear used
- Species caught
- Number caught
- Pounds caught
- Pounds sold
- Value of sales
- Port of landing

The other forms used to report commercial catches are for specific fisheries including the C-4 Aku Catch Report for the pole-and-line or bait-boat fishery for skipjack tuna, the C-5 Flagline Catch Report for the longline fishery for tunas and other pelagic species, and the Pond Operator's Monthly Fish Report for operators of saltwater fish ponds. All of the forms request basic catch and revenue information by species, plus additional fishery-specific information such as effort and bait. Commercial collectors of tropical marine fish are required to have an aquarium permit in addition to their commercial marine license and are required to report monthly on the C-6 Aquarium Fish Catch Report. However, the aquarium fish catch is not included in the statistics provided in this document.

Some of the advantages of a mandatory fisherman-reporting system are its relative efficiency, low cost, the potential for excellent percent coverage, and the amount of information that can be collected directly from the fishermen. The major disadvantage is that it places the responsibility for accurate data recording and timely data submission on the fishermen. The assumption is made, therefore, that the data submitted by the fishermen are complete and accurate. The DAR recently made several improvements to the system and is continuing its efforts to improve the quality of data and decrease the time delays in receiving and processing the data. No real measurement is available for what percent of the total commercial catch is actually reported to DAR, but estimates have ranged from about 50% to over 90%, depending on the species and fishery. Regardless of the actual percent, this data base is the most complete and accurate accounting of the commercial fishing activity in Hawaii that is available today.

DATA PROCESSING SYSTEM

When the various data reporting forms are received by DAR, they undergo a series of coding and editing procedures before being sent to the State's central data processing staff for keypunching. The use of central data processing staff instead of in-house fisheries personnel to accomplish most of the computer processing activities is a major and significant difference between the processing system in Hawaii and those in American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. Forms that fail the initial editing by DAR staff are returned to the fishermen for correction and resubmission. Notices are sent to fishermen who fall more than a few months behind in the submission of their reports. Once the data are keypunched, computer generated reports are used by DAR staff to verify and correct errors in the data base. When the data base is considered to be reasonably complete and error free, it is ready for production of a variety of summary catch reports.

Since this system is based on submission of data from fishermen, late reporting has always been a problem. The DAR has tried to include as much information as possible in its published monthly and annual reports. Before about 1982, statistics from fishermen's reports received after the generation of the computerized monthly summary reports were hand tallied and added to the final version of the reports before they were published. However, because of processing restrictions or complications, the original data bases were not updated. Since 1982, additional editing and data correction procedures have been implemented, making data base updates possible. The DAR has made significant progress recently in reducing late reporting by fishermen and the time lag before data are available. Data presented in this report series for 1979-86 are based on published monthly DAR reports and differ from final annual data base total by some small percent (refer to Volumes I and III for details). Beginning with 1987, data are processed directly from the final annual detail data base. The WPACFIN staff used this data base to generate monthly and annual reports for 1987 and to update the time series to 1987.

DATA REPORTING SYSTEM

Recorded in DAR's monthly landings reports are more than 150 marine species and species groups, many of which are insignificant in the total catch. To help reduce the volume of this document and improve the usability of the tables, WPACFIN staff combined some of the less important species, reorganized the order of presentation, created a new species coding system, and translated all records in the data base. The new coding

system has 100 species and species groups based on flexible ecological and phylogenetic criteria. All of the commercially important pelagic and bottom fish species or unique species groups have individual codes and are reported separately. Marine pond catches are included in the species totals, but are less than 0.4% of the total landings for each year.

The monthly and annual reports included in this document contain the common name, weight in pounds, value rounded to the nearest dollar, and the average price per pound for each species. Also included are separate annual reports for commercial fishermen's landings that were not sold. Each monthly report contains a subtotal for the sum of all species for that month, and the December report contains the December subtotal and the annual total. Annual reports contain the total landings for each species and the total recorded landings for all species combined for the calendar year.

Four graphs of monthly landings are presented for 1987, and 26 trend and seasonality graphs, based on 1979-87 data, are also provided. The following species, species groups, and abbreviations are used in the tables and graphs of Hawaii's fishery statistics:

I. Pelagic Management Unit Species (PMUS)

- Dolphin (mahimahi)
- Wahoo
- Blue marlin
- Black marlin
- Striped marlin
- Shortbill spearfish
- Sailfish
- Swordfish
- Sharks

II. Bottomfish Management Unit Species (BMUS)

- Deep water jacks (unclassified)
- Amberjack
- Pig-lipped ulua (jack)
- White ulua
- Giant sea bass
- Bluelined snapper
- Ehu (red snapper)
- Gindai (flower snapper)
- Kalikali (pink snapper)
- Lehi (silverjaw snapper)
- Onaga (red or long tailed snapper)
- Opakapaka (pink snapper)
- Uku (gray snapper)

III. Billfish

Billfish (unclassified)
Blue marlin
Black marlin
Striped marlin
Shortbill spearfish
Sailfish
Swordfish

IV. Tunas

Tunas (unclassified)
Skipjack tuna
Yellowfin tuna
Albacore
Bigeye tuna
Kawakawa
Dogtooth tuna

V. Other Tunas

All of the previous tunas excluding
skipjack and yellowfin tuna

VI. Fisheries Categories

A. Pelagics

All PMUS and tuna species plus the following:
Rainbow runner
Barracuda
Japanese mackerel
Frigate tuna
Ocean sunfish
Ocean moonfish

B. Bottom Fish

All BMUS plus the following:
Blue crevally
Dobe ulua (jack)
Paapaa ulua
Blue spot grouper
Porgy

C. Reef Fish

Reef jacks (unclassified)
Squirrelfish
Trumpetfish
Scorpionfish
Mountain bass
Bigeyes
Cardinalfish
Goatfish
Rudderfish
Butterflyfish
Damselfish
Hawkfish
Tilapia
Wrasse
Parrotfish
Gobies
Surgeonfish-tangs
Flounders
Triggerfish
Filefish
Pufferfish

D. Other

Miscellaneous
Sharks
Rays
Eels
Bigeye scad (akule)
Mackerel scad (opelu)
Leatherback
Anchovy
Ten pounder
Bonefish
Herring-sardine
Milkfish
Flyingfish
Needlefish
Halfbeaks
Threadfin
Mullet
Pomfret
Snake mackerel
Freshwater fish
Spiny lobster
Slipper lobster
Crabs
Shrimp (freshwater)
Shrimp (saltwater)

D. Other (cont.)

Octopus
Squid
Limpets (saltwater)
Limpets (freshwater)
Clams
Stoney corals
Precious corals
Sea urchins
Sea cucumbers
Sea turtles
Algae

Table V.1.1

HAWAII 1987 ANNUAL COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	391	23694	53583.62	2.26
SHARKS	81	7802	9562.24	1.23
EELS	80	825	514.49	0.62
ALFONSIN	8	142	206.26	1.45
BIGEYE SCAD (AKULE)	2259	156585	328387.43	2.10
MACKEREL SCAD	3685	284158	487056.87	1.71
LEATHERBACK	60	161	136.45	0.85
TEN POUNDER	29	608	528.52	0.87
BONEFISH	215	8975	8953.89	1.00
HERRING/SARDINE	17	115	146.96	1.28
MILKFISH	46	1221	8410.85	6.89
FLYING FISH	5	9	2.85	0.32
NEEDLEFISH	323	5715	5940.81	1.04
HALFBEAKS	3	121	192.70	1.59
THREADFIN	91	959	3727.45	3.89
MULLET	290	8980	23698.35	2.64
POMFRET	160	6028	12413.35	2.06
SNAKE MACKEREL	11	405	101.97	0.25
JACKS (MISC.)	1772	57749	87369.39	1.51
AMBERJACK	301	14122	5374.34	0.38
BLUE CREVALLY	524	11369	25038.74	2.20
PIG-LIPPED ULUA	163	81090	88291.91	1.09
DOBE ULUA	115	2623	4165.51	1.59
PAAPAA ULUA	373	8430	15619.62	1.85
WHITE ULUA	159	18631	30113.97	1.62
BLACK ULUA	17	1236	2158.10	1.75
GIANT SEA BASS	559	72297	147797.05	2.04
BLUE SPOT GROUPER	104	1157	3245.28	2.80
SNAPPERS	235	1478	4236.42	2.87
BLUE LINED SNAPPER	1669	46227	47509.12	1.03
EHU (RED SNAPPER)	2397	52870	167902.54	3.18
GINDAI (FLOWER SNAP)	393	4830	11278.20	2.34
KALIKALI (PINK SNAP)	1392	28792	59328.49	2.06
LEHI (SILVERJAW)	1201	36344	102084.43	2.81
ONAGA (RED SNAPPER)	2951	193804	840603.63	4.34
OPAKAPAKA (PINK SNP)	4243	397467	1308488.02	3.29
UKU (GRAY SNAPPER)	1244	56945	180471.90	3.17
PORGY	113	1722	3584.33	2.08
REEF JACKS	3	57	279.30	4.90
SQUIRRELFISH	1638	40148	93368.98	2.33
TRUMPETFISH	13	64	52.23	0.82
SCORPIONFISH	582	4099	10456.71	2.55
MOUNTAIN BASS	253	4802	10999.13	2.29
BIGEYES	758	10298	16653.59	1.62
CARDINALFISH	3	5	3.95	0.79
GOATFISH	2546	52438	118566.82	2.26
RUDDERFISH	660	14198	10066.97	0.71
BUTTERFLYFISH	2	50	25.00	0.50

Table V.1.1 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
DAMSELFISH	122	1121	1448.80	1.29
HAWKFISH	114	670	893.58	1.33
TILAPIA	23	2287	7721.15	3.38
WRASSE	845	9696	24521.86	2.53
PARROTFISH	956	43981	66365.93	1.51
GOBIES	4	51	199.00	3.90
SURGEON/TANGS	2355	52677	52816.96	1.00
FLOUNDERS	6	13	18.37	1.41
TRIGGERFISH	21	141	218.84	1.55
FILEFISH	120	1081	902.29	0.83
RAINBOW RUNNER	565	14383	18557.13	1.29
DOLPHIN (MAHIMAHI)	8387	644426	1488669.06	2.31
BARRACUDAS	687	11883	15301.08	1.29
WAHOO	6668	369090	1011620.37	2.74
JAPANESE MACKEREL	2	15	29.45	1.96
TUNAS	4	417	458.20	1.10
SKIPJACK TUNA	4756	3539603	3847830.28	1.09
YELLOWFIN TUNA	19012	3589867	5209079.03	1.45
ALBACORE	182	31231	40815.66	1.31
BIGEYE TUNA	184	200418	583847.34	2.91
KAWAKAWA	432	14843	15420.54	1.04
BILLFISH	5	633	754.06	1.19
BROADBILL SWORDFISH	79	12166	37663.38	3.10
BLUE MARLIN	2259	525820	460304.73	0.88
BLACK MARLIN	105	23166	21477.15	0.93
STRIPED MARLIN	842	100645	135282.11	1.34
SHORTNOSE SPEARFISH	515	19859	34694.17	1.75
SAILFISH	25	4096	7779.18	1.90
OCEAN MOONFISH	36	8106	12879.43	1.59
SPINY LOBSTER	1050	175596	1803474.59	10.27
SLIPPER LOBSTER	861	134331	1372049.20	10.21
CRABS	374	21106	70896.76	3.36
SHRIMP (FRESHWATER)	24	299	1522.25	5.09
SHRIMP (SALTWATER)	72	11820	55645.66	4.71
OCTOPUS	929	29079	62376.97	2.15
SQUID	48	1403	2809.79	2.00
LIMPETS (SALTWATER)	539	16357	41698.04	2.55
LIMPETS (FRESHWATER)	17	406	877.50	2.16
STONEY CORALS	60	4011	7559.85	1.88
PRECIOUS CORALS	66	3796	56940.00	15.00
ALGAE	705	11283	27659.11	2.45
** TOTAL **	88193	11353717	20939777.58	

Table V.1.2

HAWAII 1987 COMMERCIAL LANDINGS NOT SOLD

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	43	622	0.00	0.00
SHARKS	26	2784	0.00	0.00
RAYs	2	15	0.00	0.00
EELS	9	49	0.00	0.00
ALFONSIN	1	100	0.00	0.00
BIGEYE SCAD (AKULE)	316	9176	0.00	0.00
MACKEREL SCAD	478	7975	0.00	0.00
LEATHERBACK	29	72	0.00	0.00
TEN POUNDER	6	25	0.00	0.00
BONEFISH	53	691	0.00	0.00
MILKFISH	6	134	0.00	0.00
FLYING FISH	4	4	0.00	0.00
NEEDLEFISH	27	152	0.00	0.00
HALFBEAKS	1	24	0.00	0.00
THREADFIN	41	354	0.00	0.00
MULLET	68	1173	0.00	0.00
POMFRET	2	27	0.00	0.00
SNAKE MACKEREL	3	46	0.00	0.00
JACKS (MISC.)	365	4781	0.00	0.00
AMBERJACK	188	5811	0.00	0.00
BLUE CREVALLY	50	470	0.00	0.00
PIG-LIPPED ULUA	12	169	0.00	0.00
DOBE ULUA	21	270	0.00	0.00
PAAPAA ULUA	12	72	0.00	0.00
WHITE ULUA	16	385	0.00	0.00
BLACK ULUA	1	50	0.00	0.00
GIANT SEA BASS	30	2844	0.00	0.00
BLUE SPOT GROUPER	6	16	0.00	0.00
SNAPPERS	24	152	0.00	0.00
BLUE LINED SNAPPER	223	2535	0.00	0.00
EHU (RED SNAPPER)	211	1766	0.00	0.00
GINDAI (FLOWER SNAP)	20	121	0.00	0.00
KALIKALI (PINK SNAP)	98	1033	0.00	0.00
LEHI (SILVERJAW)	87	1360	0.00	0.00
ONAGA (RED SNAPPER)	153	2535	0.00	0.00
OPAKAPAKA (PINK SNP)	674	13739	0.00	0.00
UKU (GRAY SNAPPER)	89	929	0.00	0.00
PORGY	16	89	0.00	0.00
REEF JACKS	2	4	0.00	0.00
SQUIRRELFISH	180	2300	0.00	0.00
TRUMPETFISH	3	52	0.00	0.00
SCORPIONFISH	36	219	0.00	0.00
MOUNTAIN BASS	42	334	0.00	0.00
BIGEYES	140	791	0.00	0.00
CARDINALFISH	3	29	0.00	0.00
GOATFISH	392	2865	0.00	0.00
RUDDERFISH	85	835	0.00	0.00
DAMSELFISH	8	57	0.00	0.00

Table V.1.2 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
HAWKFISH	11	42	0.00	0.00
TILAPIA	8	52	0.00	0.00
WRASSE	102	751	0.00	0.00
PARROTFISH	158	2213	0.00	0.00
GOBIES	3	11	0.00	0.00
SURGEON/TANGS	266	7290	0.00	0.00
TRIGGERFISH	11	64	0.00	0.00
FILEFISH	7	81	0.00	0.00
PUFFERFISH	7	39	0.00	0.00
RAINBOW RUNNER	70	820	0.00	0.00
DOLPHIN (MAHIMAHI)	1273	34527	0.00	0.00
BARRACUDAS	106	1140	0.00	0.00
WAHOO	873	21811	0.00	0.00
JAPANESE MACKEREL	5	28	0.00	0.00
TUNAS	9	392	0.00	0.00
SKIPJACK TUNA	3124	87685	0.00	0.00
YELLOWFIN TUNA	3978	198683	0.00	0.00
ALBACORE	10	970	0.00	0.00
BIGEYE TUNA	116	4050	0.00	0.00
KAWAKAWA	685	9776	0.00	0.00
BILLFISH	2	81	0.00	0.00
BROADBILL SWORDFISH	3	373	0.00	0.00
BLUE MARLIN	251	53329	0.00	0.00
BLACK MARLIN	3	359	0.00	0.00
STRIPED MARLIN	100	6547	0.00	0.00
SHORTNOSE SPEARFISH	76	2403	0.00	0.00
SAILFISH	2	133	0.00	0.00
SPINY LOBSTER	188	4714	0.00	0.00
SLIPPER LOBSTER	34	234	0.00	0.00
CRABS	101	2251	0.00	0.00
SHRIMP (FRESHWATER)	4	17	0.00	0.00
SHRIMP (SALTWATER)	39	1727	0.00	0.00
OCTOPUS	343	6709	0.00	0.00
SQUID	63	572	0.00	0.00
LIMPETS (SALTWATER)	35	1630	0.00	0.00
LIMPETS (FRESHWATER)	1	75	0.00	0.00
STONEY CORALS	27	3221	0.00	0.00
PRECIOUS CORALS	6	555	0.00	0.00
SEA URCHINS	20	139	0.00	0.00
ALGAE	117	440	0.00	0.00
** TOTAL **	16539	525970	0.00	

Table V.1.3

HAWAII JANUARY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	37	2252	3950.18	1.75
SHARKS	4	386	684.10	1.77
EELS	8	94	58.20	0.62
ALFONSIN	2	52	83.20	1.60
BIGEYE SCAD (AKULE)	160	10652	24778.13	2.33
MACKEREL SCAD	309	24110	40356.86	1.67
LEATHERBACK	2	6	4.00	0.67
TEN POUNDER	1	3	3.00	1.00
BONEFISH	9	917	993.01	1.08
MILKFISH	8	173	206.63	1.19
NEEDLEFISH	12	386	274.41	0.71
THREADFIN	10	109	481.97	4.42
MULLET	6	384	1025.31	2.67
POMFRET	18	455	1156.28	2.54
SNAKE MACKEREL	3	87	19.50	0.22
JACKS (MISC.)	133	4835	8343.64	1.73
AMBERJACK	36	1350	472.21	0.35
BLUE CREVALLY	21	476	966.79	2.03
PIG-LIPPED ULUA	27	6394	9326.06	1.46
DOBE ULUA	7	94	132.40	1.41
PAAPAA ULUA	25	560	1205.38	2.15
WHITE ULUA	15	1055	1725.80	1.64
BLACK ULUA	3	91	163.80	1.80
GIANT SEA BASS	61	4358	10495.13	2.41
BLUE SPOT GROUPER	7	30	58.50	1.95
SNAPPERS	15	352	386.91	1.10
BLUE LINED SNAPPER	116	2960	2884.10	0.97
EHU (RED SNAPPER)	208	4232	14999.33	3.54
GINDAI (FLOWER SNAP)	48	299	821.85	2.75
KALIKALI (PINK SNAP)	159	3110	6868.26	2.21
LEHI (SILVERJAW)	171	7301	21656.04	2.97
ONAGA (RED SNAPPER)	248	26368	104476.90	3.96
OPAKAPAKA (PINK SNP)	451	45004	149034.56	3.31
UKU (GRAY SNAPPER)	125	7260	22976.52	3.16
PORGY	10	79	157.63	2.00
SQUIRRELFISH	93	1253	3571.23	2.85
TRUMPETFISH	2	9	8.10	0.90
SCORPIONFISH	56	334	1170.10	3.50
MOUNTAIN BASS	14	208	442.79	2.13
BIGEYES	61	796	1484.07	1.86
GOATFISH	233	4928	10830.80	2.20
RUDDERFISH	30	1268	824.59	0.65
DAMSELFISH	6	103	154.25	1.50
HAWKFISH	4	39	56.80	1.46
TILAPIA	1	244	819.15	3.36
WRASSE	68	992	2415.83	2.44
PARROTFISH	76	3035	3991.37	1.32

Table V.1.3 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
SURGEON/TANGS	174	6246	5942.34	0.95
FLOUNDERS	1	1	1.00	1.00
TRIGGERFISH	2	6	9.00	1.50
FILEFISH	7	41	17.88	0.44
RAINBOW RUNNER	43	931	1102.98	1.18
DOLPHIN (MAHIMAH)	695	46322	137725.05	2.97
BARRACUDAS	47	540	786.44	1.46
WAHOO	168	6203	25354.18	4.09
TUNAS	1	112	119.20	1.06
SKIPJACK TUNA	197	169859	252425.30	1.49
YELLOWFIN TUNA	604	73807	137256.13	1.86
ALBACORE	1	48	144.00	3.00
BIGEYE TUNA	8	12375	33196.65	2.68
KAWAKAWA	26	570	535.06	0.94
BROADBILL SWORDFISH	9	390	1044.20	2.68
BLUE MARLIN	82	18032	26067.67	1.45
BLACK MARLIN	5	698	1235.50	1.77
STRIPED MARLIN	15	1839	3666.44	1.99
SHORTNOSE SPEARFISH	13	510	1073.28	2.10
SAILFISH	1	264	507.35	1.92
OCEAN MOONFISH	2	503	504.73	1.00
SPINY LOBSTER	54	5799	55789.79	9.62
SLIPPER LOBSTER	29	1804	13269.07	7.36
CRABS	15	1002	4128.16	4.12
SHRIMP (FRESHWATER)	2	25	125.00	5.00
SHRIMP (SALTWATER)	10	847	3010.00	3.55
OCTOPUS	60	1216	3025.09	2.49
LIMPETS (SALTWATER)	35	898	2136.16	2.38
LIMPETS (FRESHWATER)	2	84	180.00	2.14
STONEY CORALS	10	949	1516.25	1.60
ALGAE	65	971	4357.90	4.49
** SUBTOTAL **	5502	522375	1173247.47	

Table V.1.4

HAWAII FEBRUARY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	39	1688	3573.03	2.12
SHARKS	4	417	668.75	1.60
EELS	7	99	49.36	0.50
ALFONSIN	1	11	14.18	1.29
BIGEYE SCAD (AKULE)	172	8020	19842.14	2.47
MACKEREL SCAD	282	22990	37633.08	1.64
LEATHERBACK	2	9	4.25	0.47
TEN POUNDER	1	2	1.40	0.70
BONEFISH	22	913	818.40	0.90
HERRING/SARDINE	3	20	40.00	2.00
NEEDLEFISH	9	96	113.79	1.19
THREADFIN	7	71	237.62	3.35
MULLET	9	302	903.27	2.99
POMFRET	19	936	1774.22	1.90
SNAKE MACKEREL	2	126	31.50	0.25
JACKS (MISC.)	156	3973	7012.49	1.77
AMBERJACK	42	2319	1013.27	0.44
BLUE CREVALLY	18	175	346.57	1.98
PIG-LIPPED ULUA	11	6181	4825.02	0.78
DOBE ULUA	11	102	116.65	1.14
PAAPAA ULUA	32	1174	2283.14	1.94
WHITE ULUA	8	619	1086.82	1.76
GIANT SEA BASS	78	3095	6021.01	1.95
BLUE SPOT GROUPER	22	205	532.98	2.60
SNAPPERS	21	70	181.71	2.60
BLUE LINED SNAPPER	202	4337	4437.59	1.02
EHU (RED SNAPPER)	307	6925	19615.04	2.83
GINDAI (FLOWER SNAP)	74	867	1631.57	1.88
KALIKALI (PINK SNAP)	230	6236	11120.71	1.78
LEHI (SILVERJAW)	208	7657	20187.78	2.64
ONAGA (RED SNAPPER)	296	21596	80011.28	3.70
OPAKAPAKA (PINK SNP)	574	53399	154981.01	2.90
UKU (GRAY SNAPPER)	105	4896	13995.35	2.86
PORGY	8	128	252.00	1.97
SQUIRRELFISH	172	4316	9400.21	2.18
SCORPIONFISH	73	630	1813.87	2.88
MOUNTAIN BASS	22	439	1014.56	2.31
BIGEYES	70	552	826.36	1.50
GOATFISH	251	8744	17193.13	1.97
RUDDERFISH	61	962	717.25	0.75
DAMSELFISH	10	80	105.38	1.32
HAWKFISH	14	69	84.42	1.22
TILAPIA	2	153	500.10	3.27
WRASSE	93	1157	2606.55	2.25
PARROTFISH	81	2951	4091.09	1.39
SURGEON/TANGS	199	7419	7096.45	0.96
FLOUNDERS	2	5	5.00	1.00

Table V.1.4 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
TRIGGERFISH	6	17	67.63	3.98
FILEFISH	14	90	74.25	0.83
RAINBOW RUNNER	37	406	450.39	1.11
DOLPHIN (MAHIMAHI)	1300	105402	220770.43	2.09
BARRACUDAS	52	674	669.88	0.99
WAHOO	250	9422	35221.26	3.74
JAPANESE MACKEREL	1	10	19.95	2.00
SKIPJACK TUNA	379	365359	384894.75	1.05
YELLOWFIN TUNA	783	89459	160265.03	1.79
BIGEYE TUNA	4	48490	52379.27	1.08
KAWAKAWA	19	391	465.03	1.19
BROADBILL SWORDFISH	5	163	427.95	2.63
BLUE MARLIN	77	19694	26912.96	1.37
BLACK MARLIN	6	1762	1774.75	1.01
STRIPED MARLIN	20	2720	5924.86	2.18
SHORTNOSE SPEARFISH	50	1964	3807.21	1.94
SAILFISH	2	321	589.00	1.83
OCEAN MOONFISH	2	625	1005.00	1.61
SPINY LOBSTER	137	20463	234960.60	11.48
SLIPPER LOBSTER	99	11968	98483.75	8.23
CRABS	42	2995	9785.28	3.27
SHRIMP (FRESHWATER)	2	20	100.00	5.00
SHRIMP (SALTWATER)	3	206	517.00	2.51
OCTOPUS	58	1450	3576.64	2.47
LIMPETS (SALTWATER)	57	1468	3670.89	2.50
LIMPETS (FRESHWATER)	1	33	70.00	2.12
STONEY CORALS	11	509	1265.00	2.49
ALGAE	55	1114	2743.63	2.46
** SUBTOTAL **	7504	874326	1691703.74	

Table V.1.5

HAWAII MARCH 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	30	6987	20034.88	2.87
SHARKS	11	1471	2483.10	1.69
EELS	10	110	60.35	0.55
ALFONSIN	1	32	42.53	1.33
BIGEYE SCAD (AKULE)	214	12574	29977.79	2.38
MACKEREL SCAD	317	24233	41224.90	1.70
LEATHERBACK	7	23	12.88	0.56
TEN POUNDER	3	17	16.25	0.96
BONEFISH	22	759	674.91	0.89
MILKFISH	2	16	22.90	1.43
NEEDLEFISH	31	284	331.96	1.17
THREADFIN	4	19	63.25	3.33
MULLET	36	856	2294.14	2.68
POMFRET	11	234	510.65	2.18
SNAKE MACKEREL	2	27	7.45	0.28
JACKS (MISC.)	117	3124	5315.56	1.70
AMBERJACK	15	868	482.63	0.56
BLUE CREVALLY	27	400	974.45	2.44
PIG-LIPPED ULUA	11	11254	11813.49	1.05
DOBE ULUA	10	276	412.14	1.49
PAAPAA ULUA	30	476	986.34	2.07
WHITE ULUA	8	215	544.59	2.53
BLACK ULUA	1	6	10.80	1.80
GIANT SEA BASS	54	7045	12673.29	1.80
BLUE SPOT GROUPER	17	371	1331.63	3.59
SNAPPERS	21	112	228.62	2.04
BLUE LINED SNAPPER	139	2885	2823.72	0.98
EHU (RED SNAPPER)	206	4803	13733.02	2.86
GINDAI (FLOWER SNAP)	41	289	683.15	2.36
KALIKALI (PINK SNAP)	129	3512	7161.75	2.04
LEHI (SILVERJAW)	130	4617	12614.75	2.73
ONAGA (RED SNAPPER)	225	12734	53324.45	4.19
OPAKAPAKA (PINK SNP)	369	43256	132958.62	3.07
UKU (GRAY SNAPPER)	49	1454	4839.77	3.33
PORGY	4	48	103.50	2.16
SQUIRRELFISH	130	3718	8009.08	2.15
SCORPIONFISH	45	304	831.65	2.74
MOUNTAIN BASS	31	854	1554.06	1.82
BIGEYES	66	577	919.97	1.59
GOATFISH	180	2748	7148.46	2.60
RUDDERFISH	58	860	616.21	0.72
DAMSELFISH	4	10	10.75	1.08
HAWKFISH	11	80	123.10	1.54
TILAPIA	2	275	940.75	3.42
WRASSE	55	598	1377.19	2.30
PARROTFISH	67	3133	4933.12	1.57
SURGEON/TANGS	194	4378	4279.69	0.98

Table V.1.5 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
TRIGGERFISH	2	7	36.00	5.14
FILEFISH	13	92	55.20	0.60
RAINBOW RUNNER	31	533	697.11	1.31
DOLPHIN (MAHIMAHI)	1514	152614	259678.14	1.70
BARRACUDAS	44	745	1232.59	1.65
WAHOO	372	18515	61796.39	3.34
SKIPJACK TUNA	335	171981	193453.92	1.12
YELLOWFIN TUNA	1543	235534	411707.69	1.75
ALBACORE	3	341	959.20	2.81
BIGEYE TUNA	10	26359	108438.25	4.11
KAWAKAWA	14	504	549.55	1.09
BROADBILL SWORDFISH	5	637	2487.90	3.91
BLUE MARLIN	134	39233	49677.51	1.27
BLACK MARLIN	17	4768	5253.25	1.10
STRIPED MARLIN	36	4557	11106.32	2.44
SHORTNOSE SPEARFISH	85	3289	6731.10	2.05
SAILFISH	2	776	1830.00	2.36
OCEAN MOONFISH	3	419	800.00	1.91
SPINY LOBSTER	93	9906	77900.86	7.86
SLIPPER LOBSTER	74	5855	43798.48	7.48
CRABS	44	4473	14016.74	3.13
SHRIMP (FRESHWATER)	3	25	121.75	4.87
SHRIMP (SALTWATER)	2	63	437.85	6.95
OCTOPUS	56	1553	3587.96	2.31
LIMPETS (SALTWATER)	54	1238	3530.11	2.85
STONEY CORALS	10	538	935.60	1.74
PRECIOUS CORALS	5	180	2700.00	15.00
ALGAE	77	1579	3583.81	2.27
** SUBTOTAL **	7728	849236	1658621.52	

Table V.1.6

HAWAII APRIL 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	42	1702	3617.49	2.13
SHARKS	5	239	150.69	0.63
EELS	5	44	30.68	0.70
BIGEYE SCAD (AKULE)	219	12294	27431.35	2.23
MACKEREL SCAD	442	34757	59194.19	1.70
LEATHERBACK	10	22	12.86	0.58
TEN POUNDER	6	250	153.57	0.61
BONEFISH	22	385	400.14	1.04
MILKFISH	8	239	241.28	1.01
NEEDLEFISH	66	804	1145.92	1.43
THREADFIN	3	12	46.80	3.90
MULLET	27	490	1358.71	2.77
POMFRET	7	382	749.21	1.96
JACKS (MISC.)	128	3656	6453.16	1.77
AMBERJACK	22	955	480.00	0.50
BLUE CREVALLY	100	2023	4574.63	2.26
PIG-LIPPED ULUA	2	5092	8742.57	1.72
DOBE ULUA	6	130	160.72	1.24
PAAPAA ULUA	59	1111	2271.63	2.04
WHITE ULUA	7	310	824.10	2.66
BLACK ULUA	4	1050	1845.75	1.76
GIANT SEA BASS	32	6614	13091.17	1.98
BLUE SPOT GROUPER	10	42	139.11	3.31
SNAPPERS	22	80	234.38	2.93
BLUE LINED SNAPPER	115	6413	6628.05	1.03
EHU (RED SNAPPER)	137	2537	9064.10	3.57
GINDAI (FLOWER SNAP)	21	210	557.32	2.65
KALIKALI (PINK SNAP)	76	1438	3167.86	2.20
LEHI (SILVERJAW)	65	1251	3538.82	2.83
ONAGA (RED SNAPPER)	133	5846	31210.33	5.34
OPAKAPAKA (PINK SNP)	205	18851	67899.06	3.60
UKU (GRAY SNAPPER)	77	2389	7679.94	3.21
PORGY	5	44	84.25	1.91
REEF JACKS	1	32	149.60	4.68
SQUIRRELFISH	117	2677	7382.80	2.76
TRUMPETFISH	3	14	13.35	0.95
SCORPIONFISH	42	286	648.55	2.27
MOUNTAIN BASS	17	329	824.26	2.51
BIGEYES	47	774	1159.39	1.50
GOATFISH	221	4106	9513.17	2.32
RUDDERFISH	65	1894	1280.49	0.68
BUTTERFLYFISH	1	20	10.00	0.50
DAMSELFISH	12	36	36.77	1.02
HAWKFISH	10	56	73.75	1.32
TILAPIA	1	411	1417.75	3.45
WRASSE	53	612	1565.56	2.56
PARROTFISH	64	1791	2468.47	1.38

Table V.1.6 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
SURGEON/TANGS	240	5421	5318.43	0.98
TRIGGERFISH	3	5	19.13	3.83
FILEFISH	9	38	43.82	1.15
RAINBOW RUNNER	51	777	1210.53	1.56
DOLPHIN (MAHIMAHI)	1092	81856	169826.81	2.07
BARRACUDAS	65	979	1390.10	1.42
WAHOO	817	45356	112833.46	2.49
SKIPJACK TUNA	400	125970	207269.07	1.65
YELLOWFIN TUNA	2131	343663	522229.87	1.52
ALBACORE	5	1237	2223.95	1.80
BIGEYE TUNA	17	19298	65580.17	3.40
KAWAKAWA	36	1103	1249.00	1.13
BROADBILL SWORDFISH	9	849	2804.71	3.30
BLUE MARLIN	135	34143	44591.50	1.31
BLACK MARLIN	5	1732	1670.85	0.96
STRIPED MARLIN	70	7882	14435.77	1.83
SHORTNOSE SPEARFISH	63	2384	4422.16	1.85
SAILFISH	3	573	1287.45	2.25
OCEAN MOONFISH	3	362	730.00	2.02
SPINY LOBSTER	68	2412	28993.07	12.02
SLIPPER LOBSTER	53	2176	19468.47	8.95
CRABS	32	1449	5139.38	3.55
SHRIMP (FRESHWATER)	1	26	143.00	5.50
SHRIMP (SALTWATER)	2	375	1135.75	3.03
OCTOPUS	56	1723	3573.12	2.07
LIMPETS (SALTWATER)	65	2027	5448.78	2.69
STONEY CORALS	5	324	710.00	2.19
ALGAE	57	1229	2034.35	1.66
** SUBTOTAL **	8235	810069	1515506.45	

Table V.1.7

HAWAII MAY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	46	1815	4063.18	2.24
SHARKS	10	1468	2336.32	1.59
EELS	3	12	8.10	0.68
BIGEYE SCAD (AKULE)	292	32788	59013.49	1.80
MACKEREL SCAD	232	11915	22517.85	1.89
LEATHERBACK	10	29	21.30	0.73
TEN POUNDER	5	161	118.70	0.74
BONEFISH	24	473	415.96	0.88
HERRING/SARDINE	2	4	1.50	0.38
MILKFISH	14	208	166.36	0.80
FLYING FISH	2	3	0.75	0.25
NEEDLEFISH	44	595	702.28	1.18
HALFBEAKS	2	54	125.70	2.33
THREADFIN	9	57	217.21	3.81
MULLET	41	1563	4202.75	2.69
POMFRET	8	396	603.80	1.52
JACKS (MISC.)	122	7113	6882.02	0.97
AMBERJACK	29	1075	456.44	0.42
BLUE CREVALLY	38	787	1883.35	2.39
PIG-LIPPED ULUA	8	6449	5607.40	0.87
DOBE ULUA	2	52	143.65	2.76
PAAPAA ULUA	22	251	536.75	2.14
WHITE ULUA	11	522	766.69	1.47
BLACK ULUA	1	4	2.80	0.70
GIANT SEA BASS	33	6496	17399.93	2.68
BLUE SPOT GROUPER	6	78	128.60	1.65
SNAPPERS	13	44	169.07	3.84
BLUE LINED SNAPPER	104	3800	3380.46	0.89
EHU (RED SNAPPER)	154	3782	12545.11	3.32
GINDAI (FLOWER SNAP)	25	261	722.10	2.77
KALIKALI (PINK SNAP)	66	1623	3822.19	2.36
LEHI (SILVERJAW)	23	272	738.66	2.72
ONAGA (RED SNAPPER)	187	12936	55037.44	4.25
OPAKAPAKA (PINK SNP)	163	17963	58985.87	3.28
UKU (GRAY SNAPPER)	89	4154	14101.36	3.39
PORGY	10	131	319.30	2.44
SQUIRRELFISH	119	3728	8559.68	2.30
TRUMPETFISH	1	2	0.37	0.19
SCORPIONFISH	40	320	801.39	2.50
MOUNTAIN BASS	25	542	1519.19	2.80
BIGEYES	38	716	1007.56	1.41
GOATFISH	200	5678	11582.18	2.04
RUDDERFISH	99	1948	1237.92	0.64
BUTTERFLYFISH	1	30	15.00	0.50
DAMSELFISH	14	60	55.03	0.92
HAWKFISH	7	28	40.09	1.43
TILAPIA	2	181	592.25	3.27

Table V.1.7 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
WRASSE	62	742	1956.25	2.64
PARROTFISH	101	3138	4234.00	1.35
SURGEON/TANGS	229	4319	4432.10	1.03
TRIGGERFISH	3	9	55.00	6.11
FILEFISH	16	161	75.20	0.47
RAINBOW RUNNER	40	901	1085.17	1.20
DOLPHIN (MAHIMAH)	798	69818	143773.41	2.06
BARRACUDAS	59	727	1135.75	1.56
WAHOO	1314	79305	146968.12	1.85
JAPANESE MACKEREL	1	5	9.50	1.90
SKIPJACK TUNA	576	339775	368843.17	1.09
YELLOWFIN TUNA	2446	445464	524079.43	1.18
ALBACORE	26	5126	5942.74	1.16
BIGEYE TUNA	48	10970	27733.22	2.53
KAWAKAWA	10	206	218.78	1.06
BILLFISH	1	99	92.61	0.94
BROADBILL SWORDFISH	7	1746	3793.40	2.17
BLUE MARLIN	167	39299	28858.61	0.73
BLACK MARLIN	10	2197	1371.13	0.62
STRIPED MARLIN	108	13475	11942.61	0.89
SHORTNOSE SPEARFISH	95	3678	4390.49	1.19
SAILFISH	3	993	1270.25	1.28
OCEAN MOONFISH	3	1050	1628.70	1.55
SPINY LOBSTER	79	4507	42857.50	9.51
SLIPPER LOBSTER	55	7025	62999.31	8.97
CRABS	38	3097	9704.43	3.13
SHRIMP (FRESHWATER)	1	21	105.00	5.00
OCTOPUS	49	1931	4110.70	2.13
LIMPETS (SALTWATER)	64	1995	5197.32	2.61
STONEY CORALS	4	224	445.00	1.99
PRECIOUS CORALS	2	26	390.00	15.00
ALGAE	87	1958	3373.77	1.72
** SUBTOTAL **	8898	1176554	1716627.77	

Table V.1.8

HAWAII JUNE 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	44	2509	3975.39	1.58
SHARKS	4	354	386.90	1.09
EELS	3	45	19.05	0.42
BIGEYE SCAD (AKULE)	276	29488	56454.98	1.91
MACKEREL SCAD	276	20935	39410.76	1.88
LEATHERBACK	2	4	3.65	0.91
TEN POUNDER	3	33	32.00	0.97
BONEFISH	19	516	489.90	0.95
HERRING/SARDINE	10	84	97.23	1.16
MILKFISH	3	97	123.30	1.27
FLYING FISH	2	4	1.60	0.40
NEEDLEFISH	10	134	235.16	1.75
THREADFIN	1	2	1.50	0.75
MULLET	24	660	1832.70	2.78
POMFRET	10	347	564.92	1.63
JACKS (MISC.)	158	5495	7724.91	1.41
AMBERJACK	17	942	260.53	0.28
BLUE CREVALLY	34	1429	3741.90	2.62
PIG-LIPPED ULUA	19	13498	12615.84	0.93
DOBE ULUA	4	21	25.50	1.21
PAAPAA ULUA	20	652	1201.94	1.84
WHITE ULUA	18	2373	4961.55	2.09
GIANT SEA BASS	39	8775	18484.04	2.11
BLUE SPOT GROUPER	4	61	124.65	2.04
SNAPPERS	14	104	444.78	4.28
BLUE LINED SNAPPER	121	4037	4039.60	1.00
EHU (RED SNAPPER)	135	3850	13192.94	3.43
GINDAI (FLOWER SNAP)	24	331	918.55	2.78
KALIKALI (PINK SNAP)	74	1245	3371.79	2.71
LEHI (SILVERJAW)	61	1138	3101.82	2.73
ONAGA (RED SNAPPER)	201	11178	50436.83	4.51
OPAKAPAKA (PINK SNP)	231	35420	119274.09	3.37
UKU (GRAY SNAPPER)	107	4736	15234.14	3.22
PORGY	10	302	641.79	2.13
REEF JACKS	2	25	129.70	5.19
SQUIRRELFISH	112	2681	6665.88	2.49
SCORPIONFISH	51	245	586.16	2.39
MOUNTAIN BASS	16	316	655.08	2.07
BIGEYES	50	883	1355.11	1.53
GOATFISH	212	3404	7936.67	2.33
RUDDERFISH	75	1219	893.65	0.73
DAMSELFISH	12	88	111.24	1.26
HAWKFISH	5	14	15.96	1.14
TILAPIA	1	77	265.00	3.44
WRASSE	62	743	1893.40	2.55
PARROTFISH	97	6057	9364.89	1.55
SURGEON/TANGS	210	4422	5049.07	1.14

Table V.1.8 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
TRIGGERFISH	2	6	19.88	3.31
FILEFISH	9	55	72.59	1.32
RAINBOW RUNNER	41	1490	1688.28	1.13
DOLPHIN (MAHIMAHI)	469	31437	88367.79	2.81
BARRACUDAS	36	1001	1312.53	1.31
WAHOO	875	56019	132110.59	2.36
TUNAS	3	305	339.00	1.11
SKIPJACK TUNA	581	334888	353342.16	1.06
YELLOWFIN TUNA	2286	503133	638468.10	1.27
ALBACORE	93	12863	13840.56	1.08
BIGEYE TUNA	16	8896	16099.87	1.81
KAWAKAWA	10	230	123.59	0.54
BILLFISH	1	142	191.70	1.35
BROADBILL SWORDFISH	18	4231	11753.10	2.78
BLUE MARLIN	238	59200	41709.27	0.70
BLACK MARLIN	16	3764	2903.21	0.77
STRIPED MARLIN	113	11852	15384.89	1.30
SHORTNOSE SPEARFISH	81	3159	5299.34	1.68
SAILFISH	1	129	273.80	2.12
OCEAN MOONFISH	4	721	942.00	1.31
SPINY LOBSTER	55	5989	63302.00	10.57
SLIPPER LOBSTER	54	5708	53286.62	9.34
CRABS	20	185	1248.50	6.75
OCTOPUS	61	1907	3971.26	2.08
SQUID	3	127	228.90	1.80
LIMPETS (SALTWATER)	80	2666	6905.70	2.59
LIMPETS (FRESHWATER)	1	25	47.00	1.88
STONEY CORALS	7	452	768.00	1.70
PRECIOUS CORALS	10	455	6825.00	15.00
ALGAE	88	1628	4931.56	3.03
** SUBTOTAL **	8155	1223636	1864104.83	

Table V.1.9

HAWAII JULY 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	28	1291	2741.19	2.12
SHARKS	6	312	269.30	0.86
EELS	8	147	128.00	0.87
BIGEYE SCAD (AKULE)	191	16250	33167.21	2.04
MACKEREL SCAD	272	18753	33464.21	1.78
LEATHERBACK	13	29	27.09	0.93
TEN POUNDER	1	3	3.00	1.00
BONEFISH	16	690	717.16	1.04
HERRING/SARDINE	2	7	8.23	1.18
NEEDLEFISH	16	312	330.87	1.06
THREADFIN	1	2	0.50	0.25
MULLET	26	716	1981.06	2.77
POMFRET	7	230	564.10	2.45
JACKS (MISC.)	135	4222	7642.99	1.81
AMBERJACK	15	739	312.25	0.42
BLUE CREVALLY	54	1070	3056.78	2.86
PIG-LIPPED ULUA	6	2901	3922.27	1.35
DOBE ULUA	5	79	93.10	1.18
PAAPAA ULUA	20	723	1284.36	1.78
WHITE ULUA	18	3201	4479.84	1.40
BLACK ULUA	3	37	54.30	1.47
GIANT SEA BASS	37	2427	5904.26	2.43
BLUE SPOT GROUPER	10	62	245.53	3.96
SNAPPERS	29	253	1201.35	4.75
BLUE LINED SNAPPER	107	2868	2952.50	1.03
EHU (RED SNAPPER)	167	2491	9082.43	3.65
GINDAI (FLOWER SNAP)	22	152	434.99	2.86
KALIKALI (PINK SNAP)	91	1399	3332.79	2.38
LEHI (SILVERJAW)	58	804	2195.99	2.73
ONAGA (RED SNAPPER)	192	10932	51818.42	4.74
OPAKAPAKA (PINK SNP)	270	25696	83738.02	3.26
UKU (GRAY SNAPPER)	115	5994	22018.06	3.67
PORGY	16	358	769.35	2.15
SQUIRRELFISH	175	4841	10877.09	2.25
SCORPIONFISH	43	259	596.82	2.30
MOUNTAIN BASS	13	203	399.67	1.97
BIGEYES	52	646	1122.54	1.74
CARDINALFISH	1	2	2.00	1.00
GOATFISH	238	5208	12160.87	2.34
RUDDERFISH	75	1193	1050.56	0.88
DAMSELFISH	21	202	295.25	1.46
HAWKFISH	10	61	82.29	1.35
TILAPIA	1	103	356.00	3.46
WRASSE	72	900	2468.66	2.74
PARROTFISH	100	6674	10461.85	1.57
SURGEON/TANGS	211	3914	3808.17	0.97
FLOUNDERS	1	3	6.25	2.08

Table V.1.9 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
TRIGGERFISH	1	80	8.00	0.10
FILEFISH	12	310	302.32	0.98
RAINBOW RUNNER	28	772	1093.25	1.42
DOLPHIN (MAHIMAHI)	218	8817	43082.61	4.89
BARRACUDAS	46	1150	1613.70	1.40
WAHOO	911	38951	113712.22	2.92
SKIPJACK TUNA	578	378004	400620.04	1.06
YELLOWFIN TUNA	2200	475208	698868.23	1.47
ALBACORE	26	2500	3377.89	1.35
BIGEYE TUNA	22	2038	4107.06	2.02
KAWAKAWA	13	329	502.20	1.53
BROADBILL SWORDFISH	15	2927	10394.32	3.55
BLUE MARLIN	247	59119	45030.13	0.76
BLACK MARLIN	12	2554	1824.58	0.71
STRIPED MARLIN	85	6297	10852.39	1.72
SHORTNOSE SPEARFISH	42	1365	2100.50	1.54
SAILFISH	2	98	285.90	2.92
OCEAN MOONFISH	2	449	785.00	1.75
SPINY LOBSTER	108	41129	403996.22	9.82
SLIPPER LOBSTER	110	21540	248003.82	11.51
CRABS	13	152	784.00	5.16
SHRIMP (SALTWATER)	26	4741	23405.06	4.94
OCTOPUS	87	2310	4829.39	2.09
SQUID	7	117	314.25	2.69
LIMPETS (SALTWATER)	48	1751	4207.48	2.40
STONEY CORALS	7	550	1030.00	1.87
PRECIOUS CORALS	9	400	6000.00	15.00
ALGAE	88	1547	3232.39	2.09
** SUBTOTAL **	7933	1184564	2355992.47	

Table V.1.10

HAWAII AUGUST 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	17	1062	2260.32	2.13
SHARKS	8	712	351.20	0.49
EELS	6	50	30.00	0.60
BIGEYE SCAD (AKULE)	144	8149	17553.33	2.15
MACKEREL SCAD	329	27129	47372.32	1.75
LEATHERBACK	3	19	18.60	0.98
TEN POUNDER	1	26	117.00	4.50
BONEFISH	18	471	494.83	1.05
NEEDLEFISH	8	86	74.38	0.86
MULLET	15	723	1810.20	2.50
POMFRET	9	651	1411.90	2.17
JACKS (MISC.)	161	4353	6986.81	1.61
AMBERJACK	5	100	47.50	0.48
BLUE CREVALLY	36	626	1360.54	2.17
PIG-LIPPED ULUA	12	2492	3927.88	1.58
DOBE ULUA	5	133	176.75	1.33
PAAPAA ULUA	11	369	351.96	0.95
WHITE ULUA	43	6988	11078.94	1.59
BLACK ULUA	2	32	47.00	1.47
GIANT SEA BASS	49	9874	16129.24	1.63
BLUE SPOT GROUPER	7	118	256.32	2.17
SNAPPERS	26	161	459.23	2.85
BLUE LINED SNAPPER	145	4139	4334.42	1.05
EHU (RED SNAPPER)	198	5926	16312.10	2.75
GINDAI (FLOWER SNAP)	34	1021	1871.90	1.83
KALIKALI (PINK SNAP)	113	2463	4541.16	1.84
LEHI (SILVERJAW)	112	3010	8272.12	2.75
ONAGA (RED SNAPPER)	246	18188	73742.13	4.05
OPAKAPAKA (PINK SNP)	399	30300	97316.94	3.21
UKU (GRAY SNAPPER)	111	5607	17526.23	3.13
PORGY	14	318	624.40	1.96
SQUIRRELFISH	194	4807	10218.69	2.13
TRUMPETFISH	1	11	7.70	0.70
SCORPIONFISH	50	462	985.10	2.13
MOUNTAIN BASS	43	953	2105.22	2.21
BIGEYES	97	1757	2519.73	1.43
CARDINALFISH	1	2	0.70	0.35
GOATFISH	228	4632	11300.23	2.44
RUDDERFISH	44	2206	1124.75	0.51
DAMSELFISH	14	377	507.88	1.35
HAWKFISH	29	136	160.95	1.18
TILAPIA	1	81	282.00	3.48
WRASSE	89	1205	3591.54	2.98
PARROTFISH	108	6112	8973.22	1.47
SURGEON/TANGS	199	4706	4516.33	0.96
FLOUNDERS	1	3	4.62	1.54
FILEFISH	11	81	64.56	0.80

Table V.1.10 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
RAINBOW RUNNER	22	458	708.39	1.55
DOLPHIN (MAHIMAHI)	160	6793	26127.43	3.85
BARRACUDAS	37	644	1030.42	1.60
WAHOO	763	43721	128965.29	2.95
SKIPJACK TUNA	499	522832	388273.39	0.74
YELLOWFIN TUNA	2139	525041	718637.03	1.37
ALBACORE	18	3622	4810.32	1.33
BIGEYE TUNA	3	2200	4307.75	1.96
KAWAKAWA	35	1367	1408.21	1.03
BILLFISH	3	392	469.75	1.20
BROADBILL SWORDFISH	6	819	3266.40	3.99
BLUE MARLIN	303	63842	53525.57	0.84
BLACK MARLIN	6	1030	1209.02	1.17
STRIPED MARLIN	94	6989	12724.38	1.82
SHORTNOSE SPEARFISH	19	751	1461.43	1.95
SAILFISH	2	106	281.50	2.66
OCEAN MOONFISH	2	500	932.00	1.86
SPINY LOBSTER	107	28719	352765.04	12.28
SLIPPER LOBSTER	121	12656	131589.24	10.40
CRABS	26	1026	3742.44	3.65
SHRIMP (FRESHWATER)	4	36	245.50	6.82
OCTOPUS	136	4554	10080.79	2.21
SQUID	18	549	1162.90	2.12
LIMPETS (SALTWATER)	42	1418	3715.91	2.62
LIMPETS (FRESHWATER)	4	84	247.50	2.95
STONEY CORALS	6	465	890.00	1.91
PRECIOUS CORALS	11	910	13650.00	15.00
ALGAE	42	334	729.03	2.18
** SUBTOTAL **	8025	1394685	2250177.50	

Table V.1.11

HAWAII SEPTEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	23	1244	3011.19	2.42
SHARKS	9	576	498.40	0.87
EELS	5	64	41.83	0.65
BIGEYE SCAD (AKULE)	199	8543	17417.30	2.04
MACKEREL SCAD	375	27306	48373.16	1.77
LEATHERBACK	4	5	3.70	0.74
TEN POUNDER	1	22	11.00	0.50
BONEFISH	20	841	802.61	0.95
MILKFISH	1	416	7575.00	18.21
FLYING FISH	1	2	0.50	0.25
NEEDLEFISH	16	189	167.51	0.89
THREADFIN	16	129	390.41	3.03
MULLET	19	916	2665.76	2.91
POMFRET	10	242	539.58	2.23
SNAKE MACKEREL	1	7	1.75	0.25
JACKS (MISC.)	183	4266	6420.38	1.51
AMBERJACK	25	705	300.66	0.43
BLUE CREVALLY	23	892	1416.04	1.59
PIG-LIPPED ULUA	8	5666	8735.51	1.54
DOBE ULUA	20	422	631.61	1.50
PAAPAA ULUA	16	1044	1488.64	1.43
WHITE ULUA	7	2068	3199.85	1.55
GIANT SEA BASS	44	9744	18288.88	1.88
BLUE SPOT GROUPER	4	27	57.32	2.12
SNAPPERS	19	89	271.41	3.05
BLUE LINED SNAPPER	148	4276	4467.20	1.04
EHU (RED SNAPPER)	176	5078	14556.41	2.87
GINDAI (FLOWER SNAP)	26	596	1410.71	2.37
KALIKALI (PINK SNAP)	109	2512	4343.48	1.73
LEHI (SILVERJAW)	81	3013	8005.05	2.66
ONAGA (RED SNAPPER)	271	17449	75038.55	4.30
OPAKAPAKA (PINK SNP)	382	32362	103266.78	3.19
UKU (GRAY SNAPPER)	128	6471	18867.51	2.92
PORGY	9	118	241.72	2.05
SQUIRRELFISH	154	3836	7840.04	2.04
TRUMPETFISH	1	3	3.00	1.00
SCORPIONFISH	47	435	995.66	2.29
MOUNTAIN BASS	25	302	773.01	2.56
BIGEYES	51	539	873.01	1.62
GOATFISH	232	3124	8436.43	2.70
RUDDERFISH	34	724	643.47	0.89
DAMSELFISH	7	41	40.86	1.00
HAWKFISH	5	43	56.05	1.30
TILAPIA	1	104	364.00	3.50
WRASSE	103	1043	2525.34	2.42
PARROTFISH	77	3164	5531.65	1.75
GOBIES	1	23	115.00	5.00

Table V.1.11 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
SURGEON/TANGS	163	3216	3288.03	1.02
FILEFISH	10	59	56.43	0.96
RAINBOW RUNNER	71	2917	3704.53	1.27
DOLPHIN (MAHIMAHI)	182	8930	31705.55	3.55
BARRACUDAS	86	1555	1702.18	1.09
WAHOO	440	29218	87459.26	2.99
SKIPJACK TUNA	288	335137	334121.78	1.00
YELLOWFIN TUNA	1397	305189	370906.20	1.22
BIGEYE TUNA	4	595	2008.00	3.37
KAWAKAWA	62	2889	2631.67	0.91
BLUE MARLIN	300	64907	52553.72	0.81
BLACK MARLIN	5	947	838.65	0.89
STRIPED MARLIN	63	6056	7491.26	1.24
SHORTNOSE SPEARFISH	16	480	1002.42	2.09
OCEAN MOONFISH	1	419	912.00	2.18
SPINY LOBSTER	121	23792	136316.35	5.73
SLIPPER LOBSTER	96	22813	261436.65	11.46
CRABS	50	2451	8294.20	3.38
SHRIMP (FRESHWATER)	1	10	47.50	4.75
SHRIMP (SALTWATER)	1	350	2100.00	6.00
OCTOPUS	121	3475	7351.44	2.12
SQUID	5	289	428.25	1.48
LIMPETS (SALTWATER)	26	712	1788.47	2.51
LIMPETS (FRESHWATER)	5	100	185.00	1.85
PRECIOUS CORALS	10	675	10125.00	15.00
ALGAE	47	290	823.13	2.84
** SUBTOTAL **	6688	968152	1709982.60	

Table V.1.12

HAWAII OCTOBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	23	998	2168.07	2.17
SHARKS	4	623	669.61	1.07
EELS	9	84	42.36	0.50
BIGEYE SCAD (AKULE)	205	9464	19904.82	2.10
MACKEREL SCAD	342	29638	47451.42	1.60
LEATHERBACK	4	12	25.52	2.13
TEN POUNDER	2	36	26.85	0.75
BONEFISH	18	886	871.07	0.98
MILKFISH	3	17	31.85	1.87
NEEDLEFISH	54	1018	830.45	0.82
THREADFIN	11	114	432.69	3.80
MULLET	27	1659	3592.85	2.17
POMFRET	15	431	864.43	2.01
JACKS (MISC.)	184	5098	8277.69	1.62
AMBERJACK	27	935	304.30	0.33
BLUE CREVALLY	107	2787	4953.93	1.78
PIG-LIPPED ULUA	4	4559	2551.55	0.56
DOBE ULUA	17	565	964.55	1.71
PAAPAA ULUA	50	1041	1550.48	1.49
WHITE ULUA	11	758	733.93	0.97
GIANT SEA BASS	41	5385	8841.54	1.64
BLUE SPOT GROUPER	1	5	10.00	2.00
SNAPPERS	28	109	435.35	3.99
BLUE LINED SNAPPER	189	4598	4654.41	1.01
EHU (RED SNAPPER)	199	4219	11663.74	2.76
GINDAI (FLOWER SNAP)	15	302	730.20	2.42
KALIKALI (PINK SNAP)	98	1627	3124.80	1.92
LEHI (SILVERJAW)	60	2028	5521.99	2.72
ONAGA (RED SNAPPER)	272	22094	87303.78	3.95
OPAKAPAKA (PINK SNP)	351	29971	95892.66	3.20
UKU (GRAY SNAPPER)	127	4982	13991.71	2.81
PORGY	12	72	125.07	1.74
SQUIRRELFISH	145	3187	7725.83	2.42
TRUMPETFISH	2	6	5.95	0.99
SCORPIONFISH	46	417	858.18	2.06
MOUNTAIN BASS	18	223	517.06	2.32
BIGEYES	97	1562	2674.76	1.71
GOATFISH	199	2362	5971.71	2.53
RUDDERFISH	34	598	500.67	0.84
DAMSELFISH	11	49	49.41	1.01
HAWKFISH	7	94	140.84	1.50
TILAPIA	2	290	982.92	3.39
WRASSE	68	772	1812.12	2.35
PARROTFISH	61	3370	5619.78	1.67
SURGEON/TANGS	177	3275	3341.45	1.02
FLOUNDERS	1	1	1.50	1.50

Table V.1.12 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
TRIGGERFISH	1	9	4.00	0.44
FILEFISH	13	78	83.59	1.07
RAINBOW RUNNER	105	2798	3528.39	1.26
DOLPHIN (MAHIMAHI)	642	46685	125167.12	2.68
BARRACUDAS	106	2256	2267.55	1.01
WAHOO	325	18148	56401.13	3.11
SKIPJACK TUNA	307	289137	351552.32	1.22
YELLOWFIN TUNA	1431	238515	389329.39	1.63
ALBACORE	1	1092	2744.20	2.51
BIGEYE TUNA	12	11237	37953.45	3.38
KAWAKAWA	79	2603	2528.17	0.97
BLUE MARLIN	305	72347	45683.37	0.63
BLACK MARLIN	12	2145	1724.76	0.80
STRIPED MARLIN	78	9098	10171.42	1.12
SHORTNOSE SPEARFISH	15	494	1150.93	2.33
SAILFISH	1	235	543.50	2.31
OCEAN MOONFISH	2	445	712.00	1.60
SPINY LOBSTER	66	5722	76448.91	13.36
SLIPPER LOBSTER	53	18516	202806.97	10.95
CRABS	35	1532	5067.20	3.31
OCTOPUS	117	4523	9535.38	2.11
SQUID	8	159	274.49	1.73
LIMPETS (SALTWATER)	35	1156	2916.04	2.52
LIMPETS (FRESHWATER)	4	80	148.00	1.85
PRECIOUS CORALS	4	450	6750.00	15.00
ALGAE	45	281	855.54	3.04
** SUBTOTAL **	7180	882062	1695093.67	

Table V.1.13

HAWAII NOVEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	24	1271	2720.90	2.14
SHARKS	4	512	419.37	0.82
EELS	7	34	22.25	0.65
BIGEYE SCAD (AKULE)	110	4586	11641.24	2.54
MACKEREL SCAD	308	27534	43867.09	1.59
LEATHERBACK	2	2	1.85	0.93
TEN POUNDER	2	45	35.75	0.79
BONEFISH	15	1221	1294.95	1.06
MILKFISH	2	4	9.90	2.48
NEEDLEFISH	50	1631	1560.85	0.96
THREADFIN	7	46	238.62	5.19
MULLET	36	495	1422.11	2.87
POMFRET	16	505	1159.17	2.30
SNAKE MACKEREL	1	18	4.50	0.25
JACKS (MISC.)	130	3438	5833.27	1.70
AMBERJACK	25	1193	364.20	0.31
BLUE CREVALLY	41	454	1247.54	2.75
PIG-LIPPED ULUA	4	2341	3556.77	1.52
DOBE ULUA	11	276	628.29	2.28
PAAPAA ULUA	42	425	1107.30	2.61
WHITE ULUA	5	313	347.73	1.11
BLACK ULUA	2	12	22.45	1.87
GIANT SEA BASS	20	4182	9098.69	2.18
BLUE SPOT GROUPER	4	62	139.00	2.24
SNAPPERS	14	51	117.16	2.30
BLUE LINED SNAPPER	136	3076	3674.69	1.19
EHU (RED SNAPPER)	166	3098	10403.67	3.36
GINDAI (FLOWER SNAP)	18	227	630.91	2.78
KALIKALI (PINK SNAP)	81	1295	3180.16	2.46
LEHI (SILVERJAW)	86	2045	6321.14	3.09
ONAGA (RED SNAPPER)	251	14313	71028.12	4.96
OPAKAPAKA (PINK SNP)	308	23659	84924.99	3.59
UKU (GRAY SNAPPER)	87	3594	11351.92	3.16
PORGY	9	90	199.45	2.22
SQUIRRELFISH	97	1947	5224.69	2.68
TRUMPETFISH	1	3	1.75	0.58
SCORPIONFISH	25	110	362.33	3.29
MOUNTAIN BASS	8	99	221.48	2.24
BIGEYES	48	616	1140.87	1.85
GOATFISH	155	2519	5244.76	2.08
RUDDERFISH	30	354	327.19	0.92
DAMSELFISH	6	45	54.03	1.20
HAWKFISH	6	31	31.90	1.03
TILAPIA	5	287	942.55	3.28
WRASSE	48	354	921.13	2.60
PARROTFISH	48	1962	2793.76	1.42
SURGEON/TANGS	163	1922	2390.73	1.24

Table V.1.13 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
FILEFISH	5	72	49.98	0.69
RAINBOW RUNNER	55	1382	2091.09	1.51
DOLPHIN (MAHIMAHI)	643	46611	128996.84	2.77
BARRACUDAS	50	837	1117.50	1.34
WAHOO	228	11706	39801.63	3.40
SKIPJACK TUNA	262	193583	208572.22	1.08
YELLOWFIN TUNA	858	157080	265233.00	1.69
ALBACORE	4	822	1485.65	1.81
BIGEYE TUNA	22	23133	85171.13	3.68
KAWAKAWA	50	1795	1985.87	1.11
BROADBILL SWORDFISH	1	67	281.40	4.20
BLUE MARLIN	194	39696	30211.26	0.76
BLACK MARLIN	5	583	464.25	0.80
STRIPED MARLIN	85	14214	14887.34	1.05
SHORTNOSE SPEARFISH	14	553	1242.13	2.25
SAILFISH	6	376	572.23	1.52
OCEAN MOONFISH	6	1259	2145.00	1.70
SPINY LOBSTER	88	16350	207266.91	12.68
SLIPPER LOBSTER	71	16186	167752.79	10.36
CRABS	36	1596	5355.38	3.36
SHRIMP (FRESHWATER)	2	32	160.00	5.00
SHRIMP (SALTWATER)	16	3066	14530.00	4.74
OCTOPUS	76	2196	4445.73	2.02
SQUID	5	130	323.50	2.49
LIMPETS (SALTWATER)	18	287	785.44	2.74
PRECIOUS CORALS	14	650	9750.00	15.00
ALGAE	26	162	476.00	2.94
** SUBTOTAL **	5504	646721	1493387.44	

Table V.1.14

HAWAII DECEMBER 1987 COMMERCIAL LANDINGS
FISH PURCHASES BY SPECIES

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
MISCELLANEOUS	38	875	1467.80	1.68
SHARKS	12	732	644.50	0.88
EELS	9	42	24.31	0.58
ALFONSIN	4	47	66.35	1.41
BIGEYE SCAD (AKULE)	77	3777	11205.65	2.97
MACKEREL SCAD	201	14858	26191.03	1.76
LEATHERBACK	1	1	0.75	0.75
TEN POUNDER	3	10	10.00	1.00
BONEFISH	10	903	980.95	1.09
MILKFISH	5	51	33.63	0.66
NEEDLEFISH	7	180	173.23	0.96
HALFBEAKS	1	67	67.00	1.00
THREADFIN	22	398	1616.88	4.06
MULLET	24	216	609.49	2.82
POMFRET	30	1219	2515.09	2.06
SNAKE MACKEREL	2	140	37.27	0.27
JACKS (MISC.)	165	8176	10476.47	1.28
AMBERJACK	43	2941	880.35	0.30
BLUE CREVALLY	25	250	516.22	2.06
PIG-LIPPED ULUA	51	14263	12667.55	0.89
DOBE ULUA	17	473	680.15	1.44
PAAPAA ULUA	46	604	1351.70	2.24
WHITE ULUA	8	209	364.13	1.74
BLACK ULUA	1	4	11.20	2.80
GIANT SEA BASS	71	4302	11369.87	2.64
BLUE SPOT GROUPER	12	96	221.64	2.31
SNAPPERS	13	53	106.45	2.01
BLUE LINED SNAPPER	147	2838	3232.38	1.14
EHU (RED SNAPPER)	344	5929	22734.65	3.83
GINDAI (FLOWER SNAP)	45	275	864.95	3.15
KALIKALI (PINK SNAP)	166	2332	5293.54	2.27
LEHI (SILVERJAW)	146	3208	9930.27	3.10
ONAGA (RED SNAPPER)	429	20170	107175.40	5.31
OPAKAPAKA (PINK SNP)	540	41586	160215.42	3.85
UKU (GRAY SNAPPER)	124	5408	17889.39	3.31
PORGY	6	34	65.87	1.94
SQUIRRELFISH	130	3157	7893.76	2.50
TRUMPETFISH	2	16	12.01	0.75
SCORPIONFISH	64	297	806.90	2.72
MOUNTAIN BASS	21	334	972.75	2.91
BIGEYES	81	880	1570.22	1.78
CARDINALFISH	1	1	1.25	1.25
GOATFISH	197	4985	11248.41	2.26
RUDDERFISH	55	972	850.22	0.87
DAMSELFISH	5	30	27.95	0.93
HAWKFISH	6	19	27.43	1.44
TILAPIA	4	81	258.68	3.19

Table V.1.14 (Cont.)

SPECIES NAME	RECORDS	WEIGHT	VALUE	\$/LB
WRASSE	72	578	1388.29	2.40
PARROTFISH	76	2594	3902.73	1.50
GOBIES	3	28	84.00	3.00
SURGEON/TANGS	196	3439	3354.17	0.98
TRIGGERFISH	1	2	0.20	0.10
FILEFISH	1	4	6.47	1.62
RAINBOW RUNNER	41	1018	1197.02	1.18
DOLPHIN (MAHIMAH)	674	39141	113447.88	2.90
BARRACUDAS	59	775	1042.44	1.35
WAHOO	205	12526	70996.84	5.67
SKIPJACK TUNA	354	313078	404462.16	1.29
YELLOWFIN TUNA	1194	197774	372098.93	1.88
ALBACORE	5	3580	5287.15	1.48
BIGEYE TUNA	18	34827	146872.52	4.22
KAWAKAWA	78	2856	3223.41	1.13
BROADBILL SWORDFISH	4	337	1410.00	4.18
BLUE MARLIN	77	16308	15483.16	0.95
BLACK MARLIN	6	986	1207.20	1.22
STRIPED MARLIN	75	15666	16694.43	1.07
SHORTNOSE SPEARFISH	22	1232	2013.18	1.63
SAILFISH	2	225	338.20	1.50
OCEAN MOONFISH	6	1354	1783.00	1.32
SPINY LOBSTER	74	10808	122877.34	11.37
SLIPPER LOBSTER	46	8084	69154.03	8.55
CRABS	23	1148	3631.05	3.16
SHRIMP (FRESHWATER)	8	104	474.50	4.56
SHRIMP (SALTWATER)	12	2172	10510.00	4.84
OCTOPUS	52	2241	4289.47	1.91
SQUID	2	32	77.50	2.42
LIMPETS (SALTWATER)	15	741	1395.74	1.88
PRECIOUS CORALS	1	50	750.00	15.00
ALGAE	28	190	518.00	2.73
** SUBTOTAL **	6841	821337	1815332.12	
** 1987 TOTAL **	88193	11353717	20939777.58	

Figure V.1.1

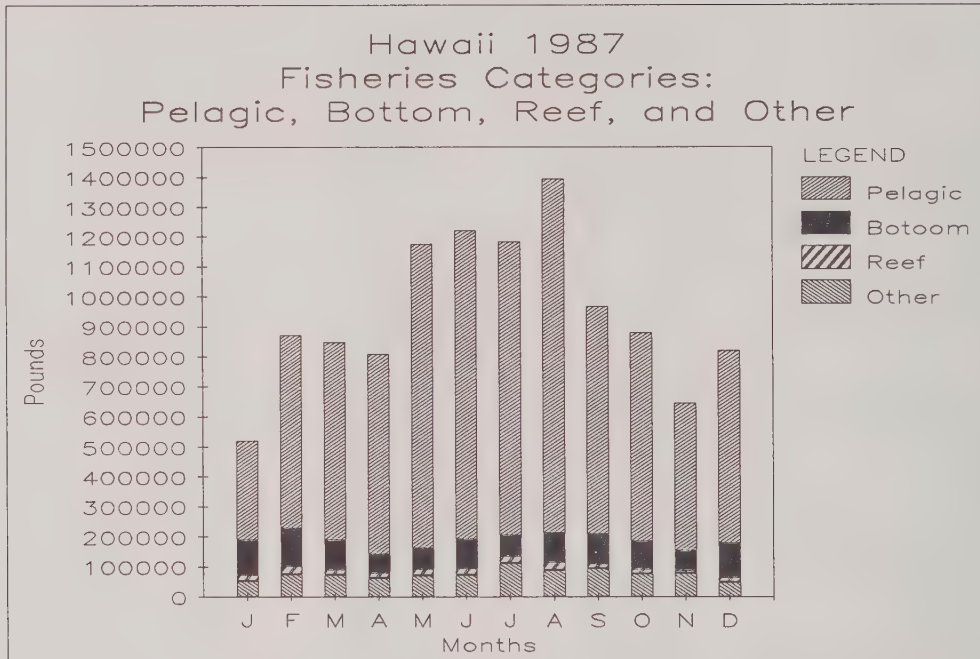


Figure V.1.2

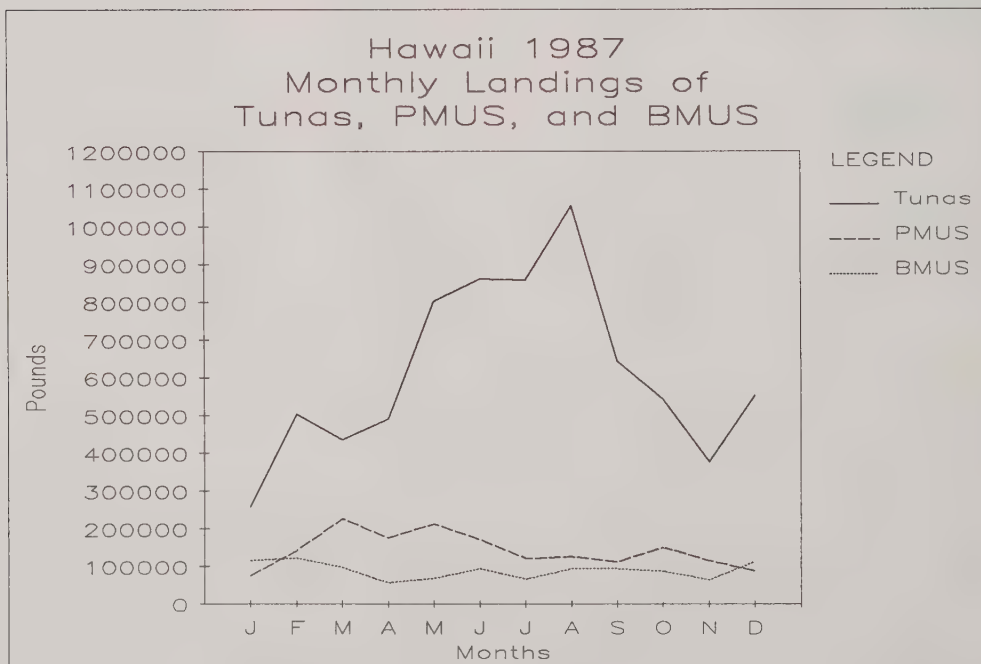


Figure V.1.3

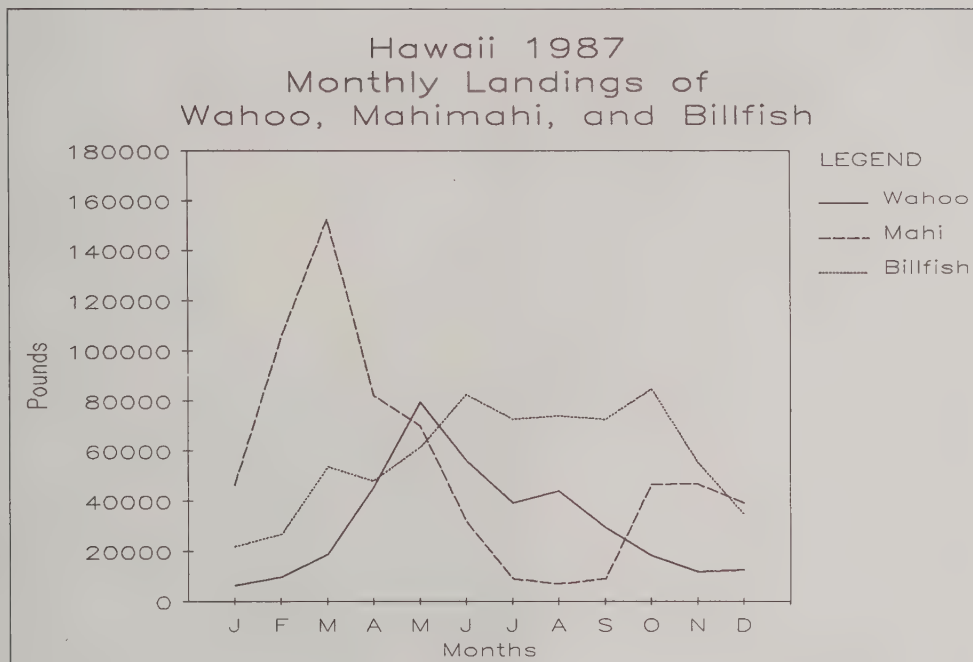


Figure V.1.4

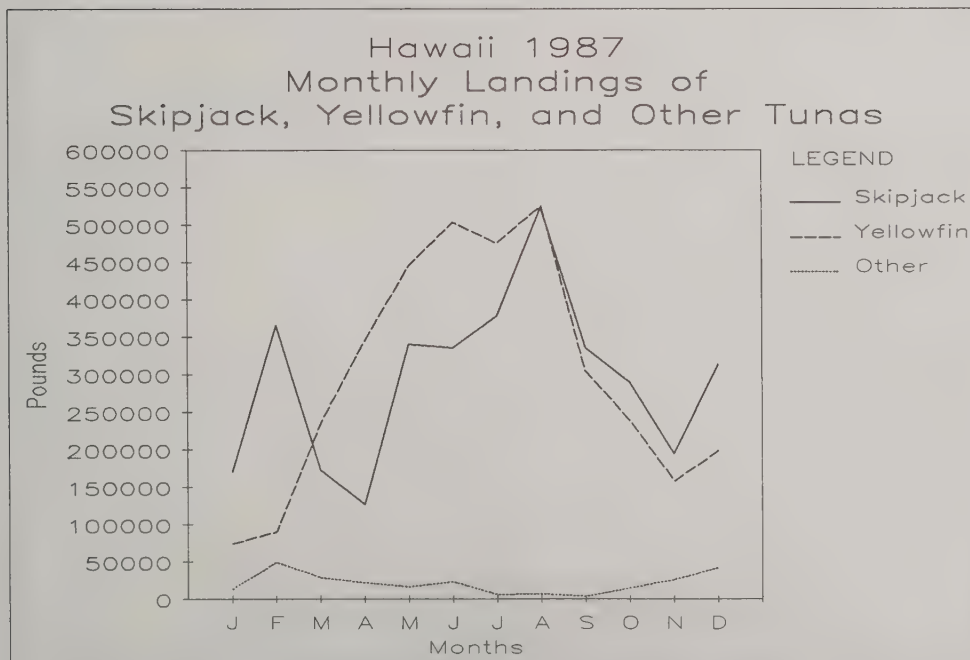


Figure V.2.1

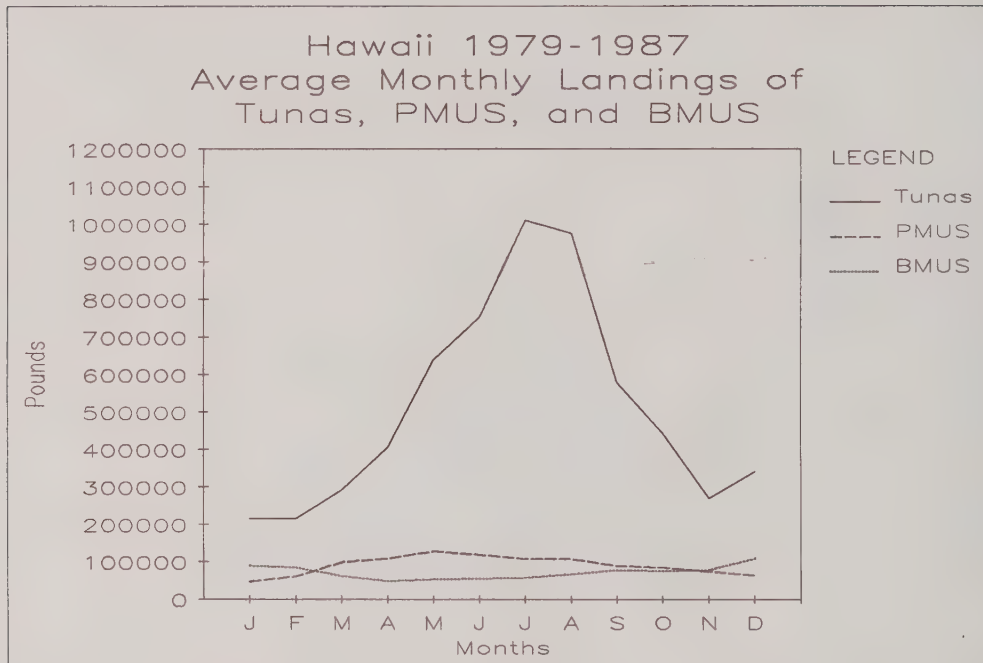


Figure V.2.2

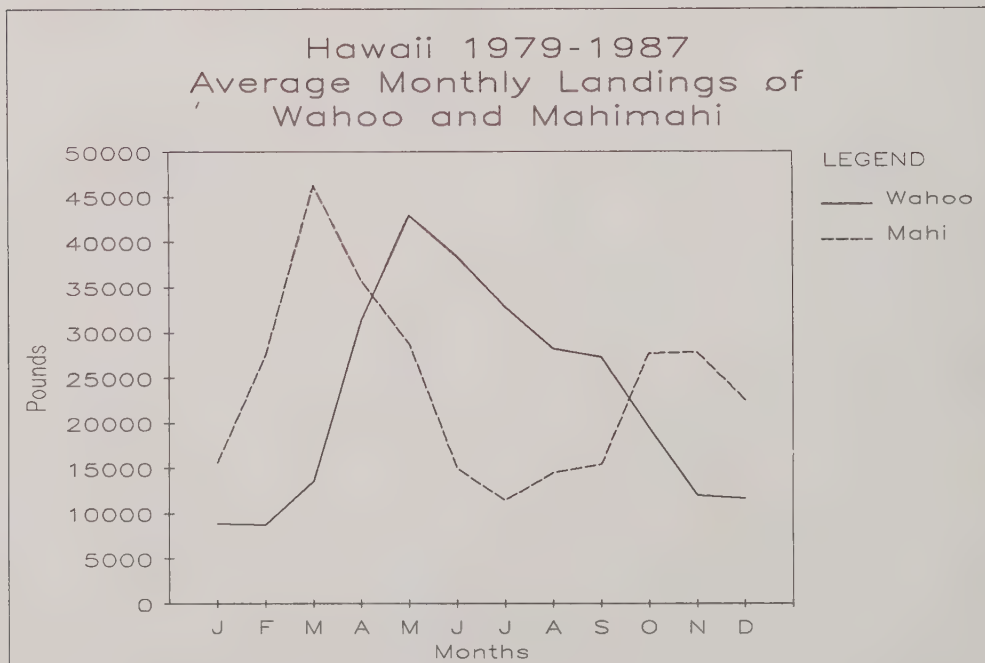


Figure V.2.3

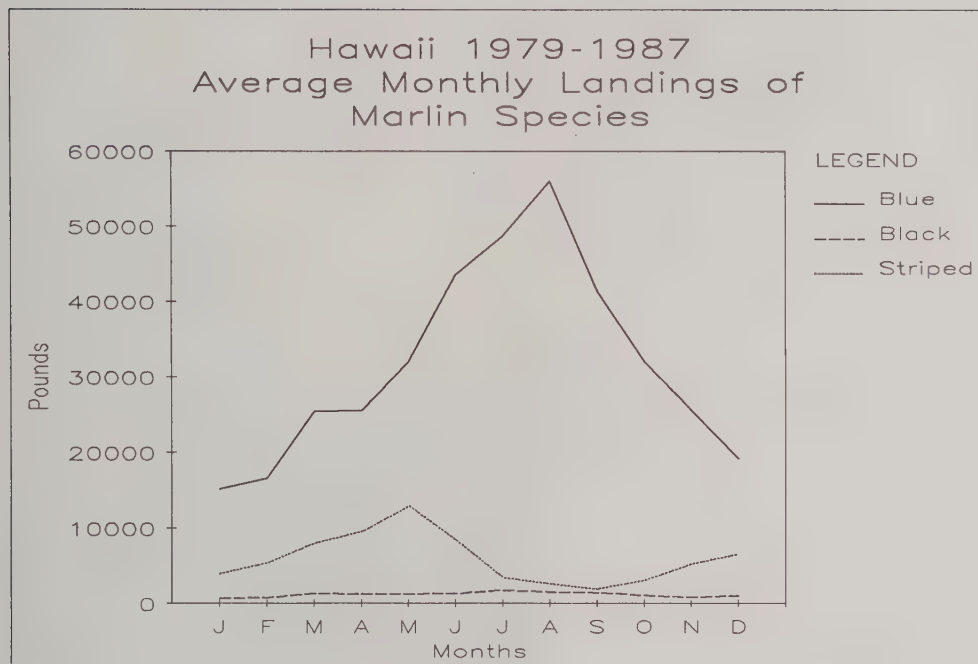


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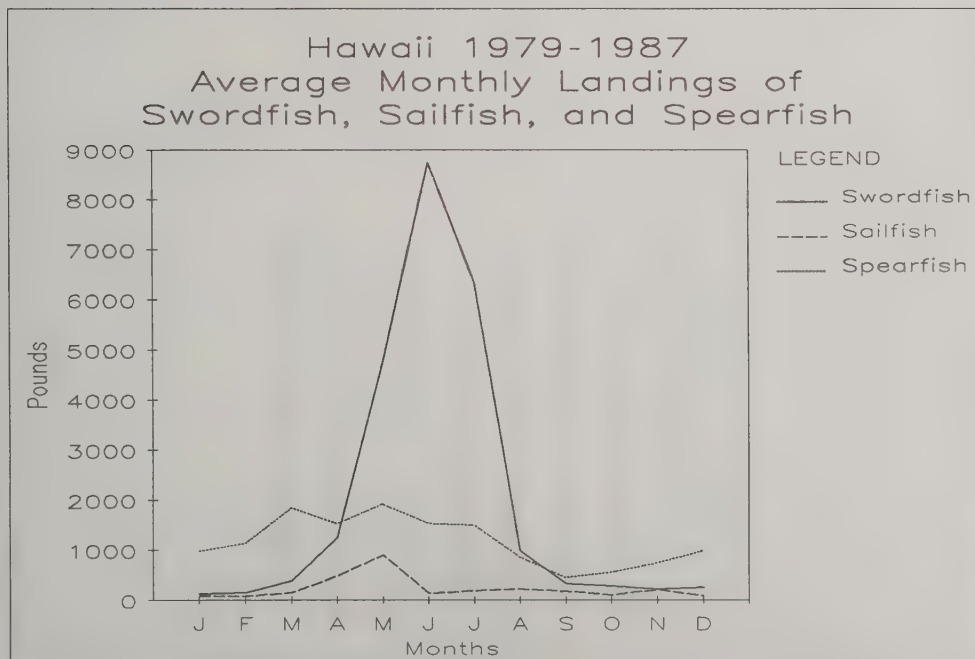


Figure V.2.5

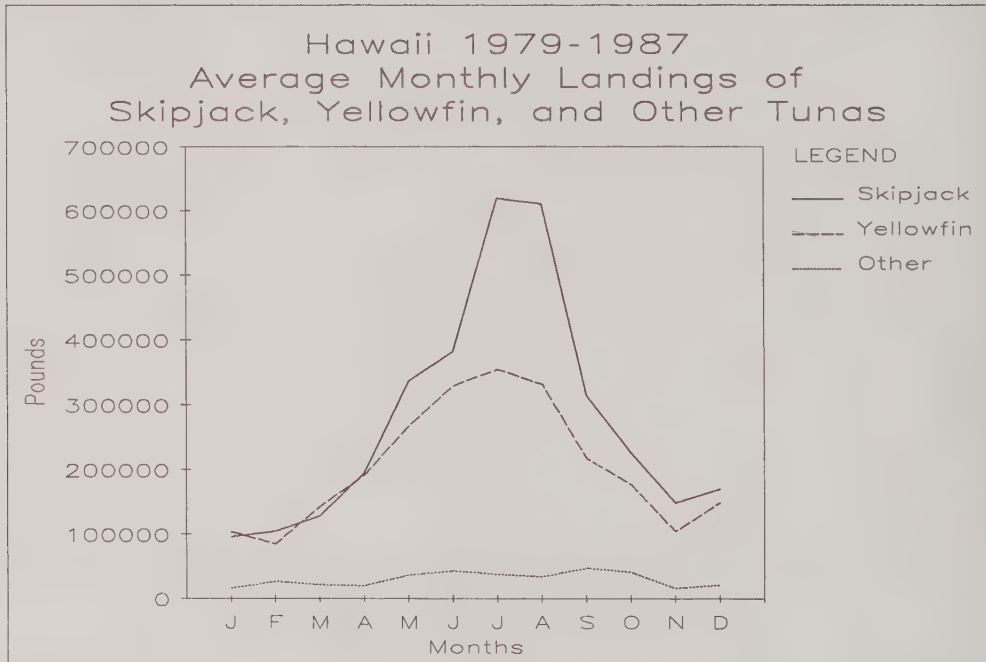


Figure V.2.6

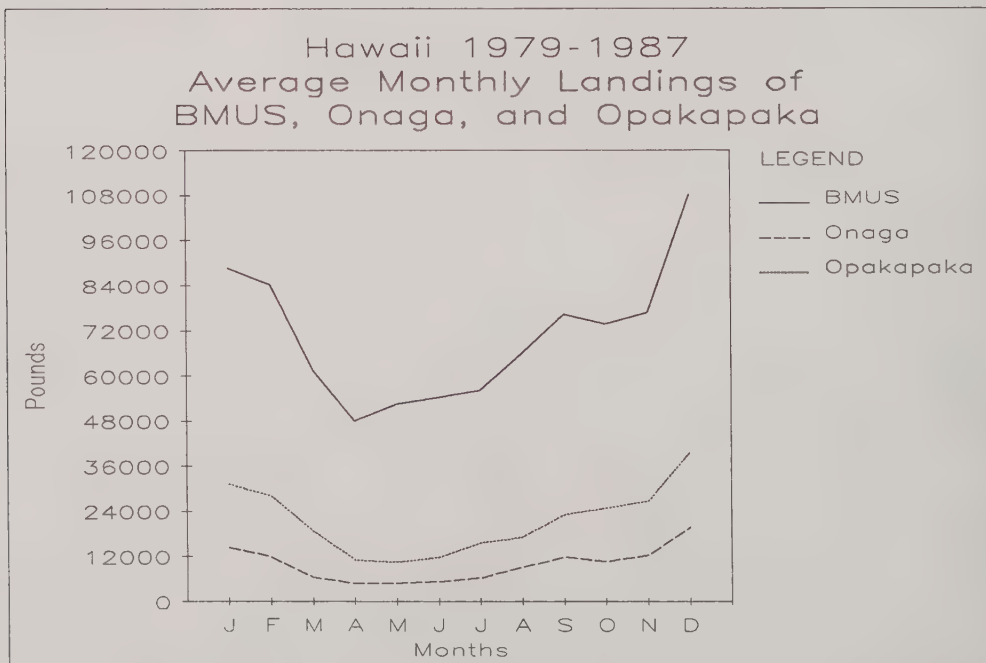


Figure V.2.7

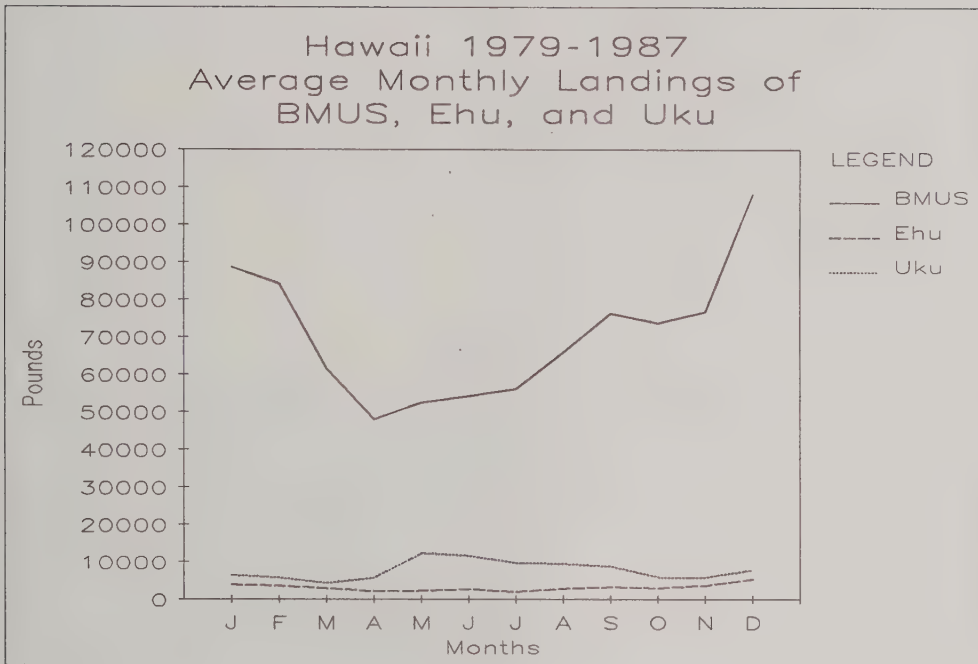


Figure V.3.1

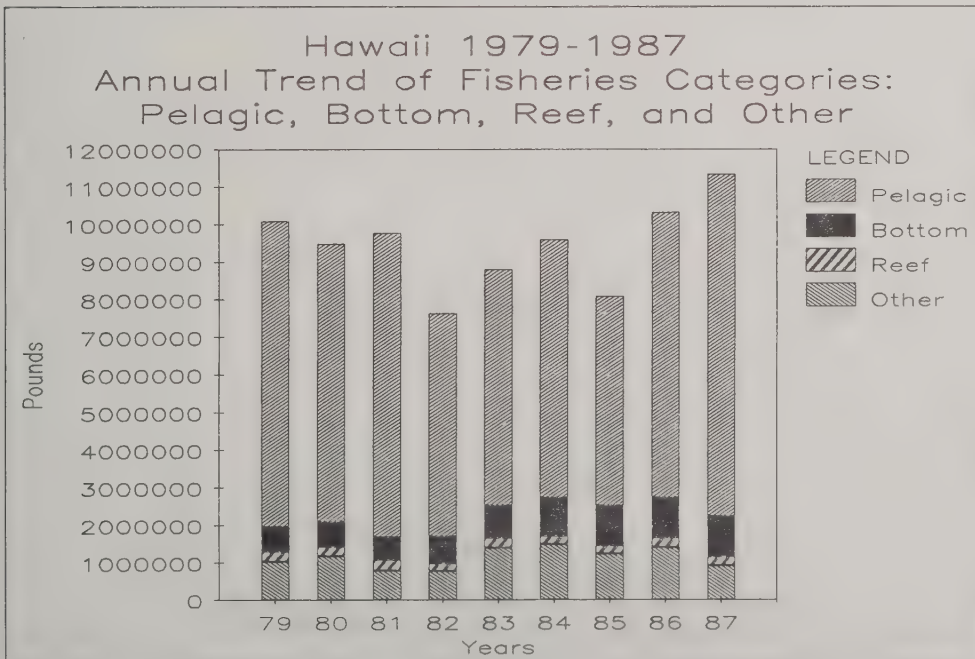


Figure V.3.2

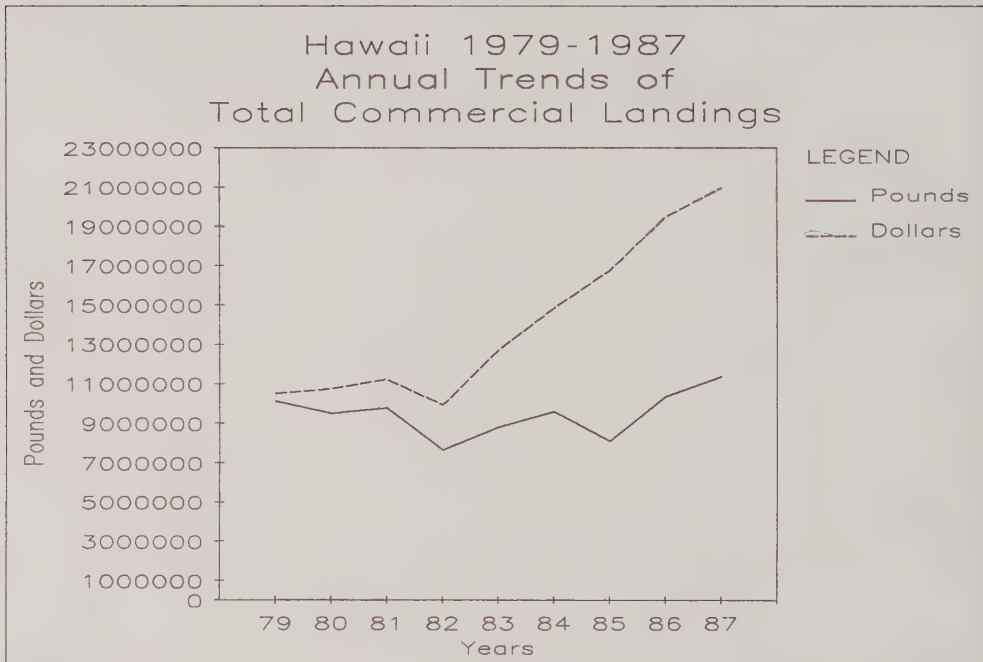


Figure V.3.3

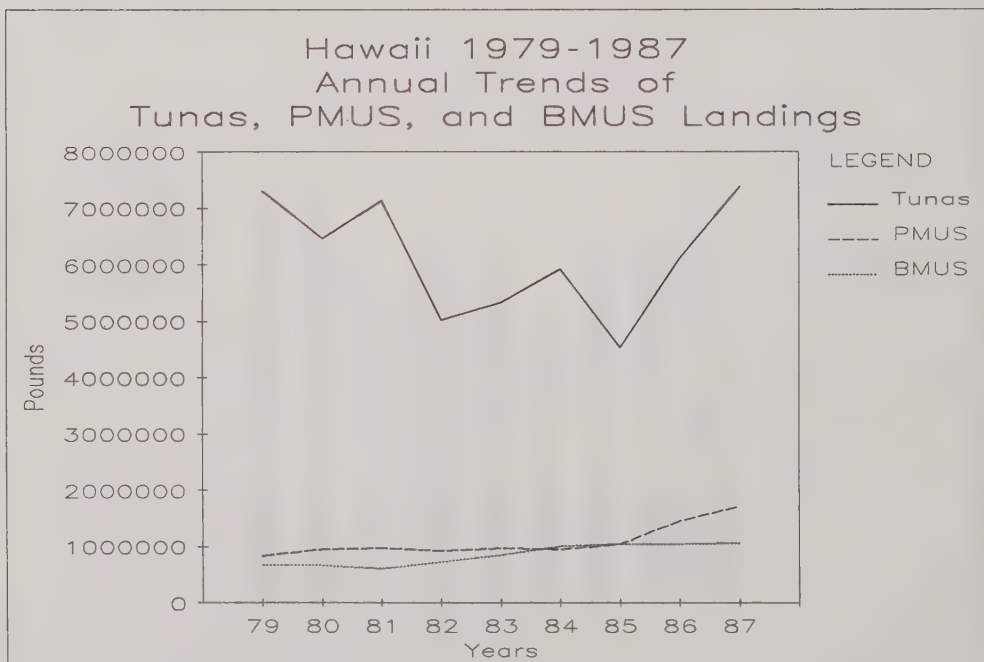


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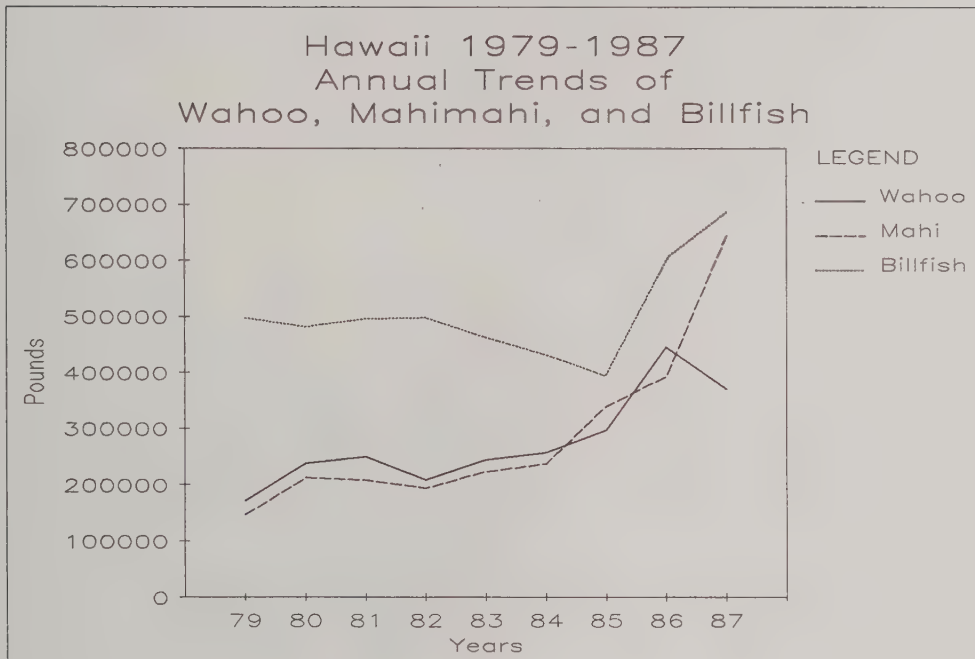


Figure V.3.5

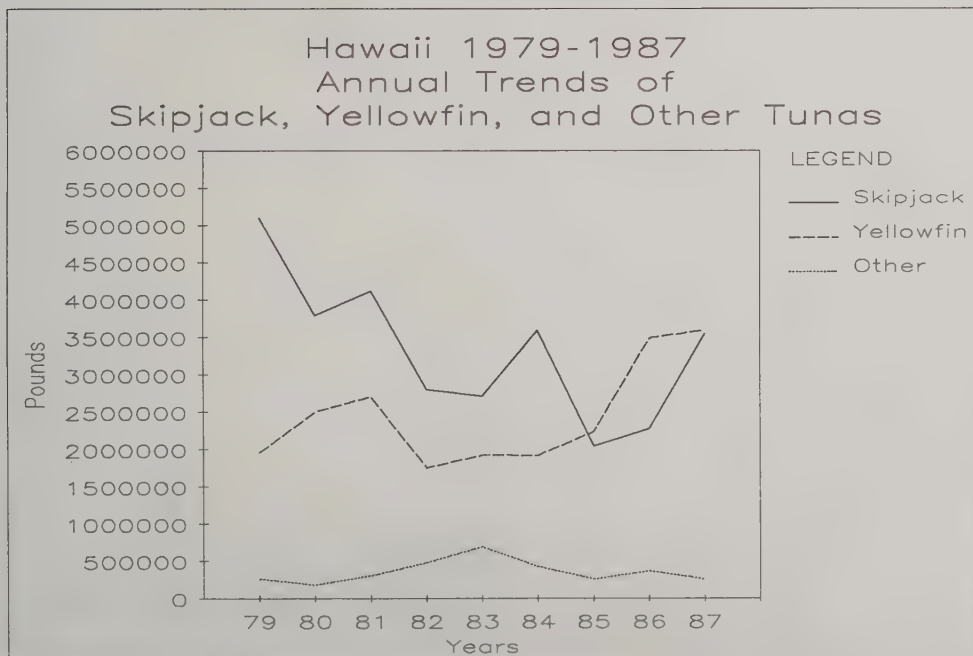


Figure V.4.1

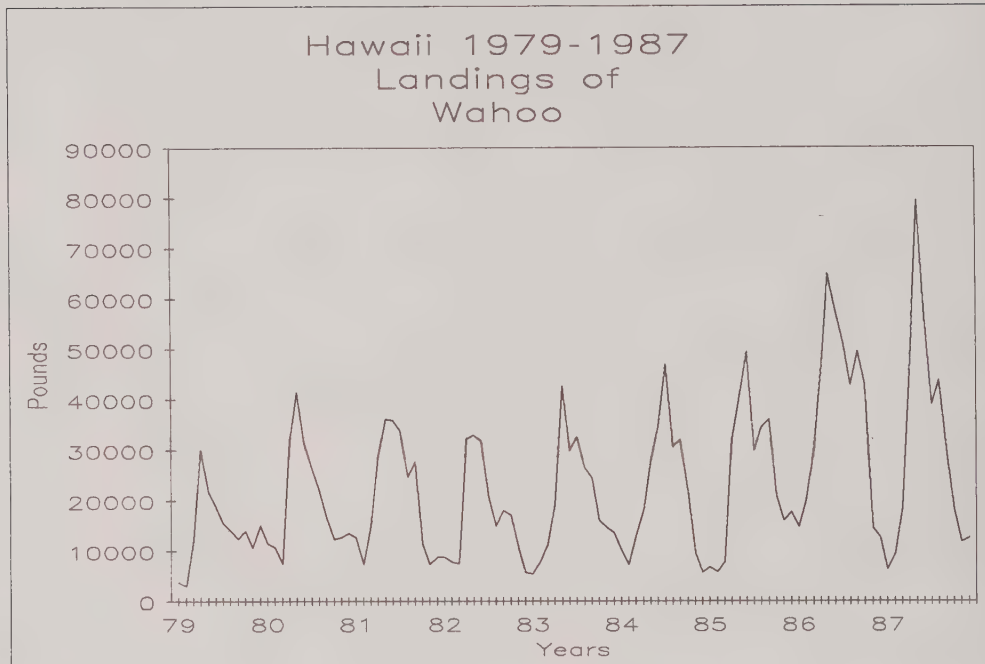


Figure V.4.2

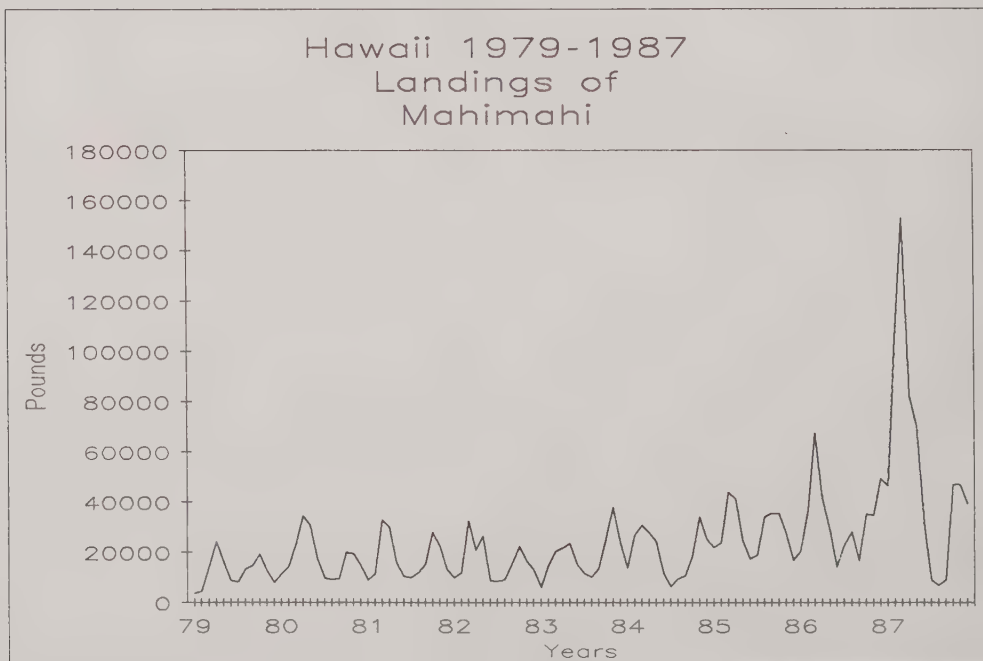


Figure V.4.3

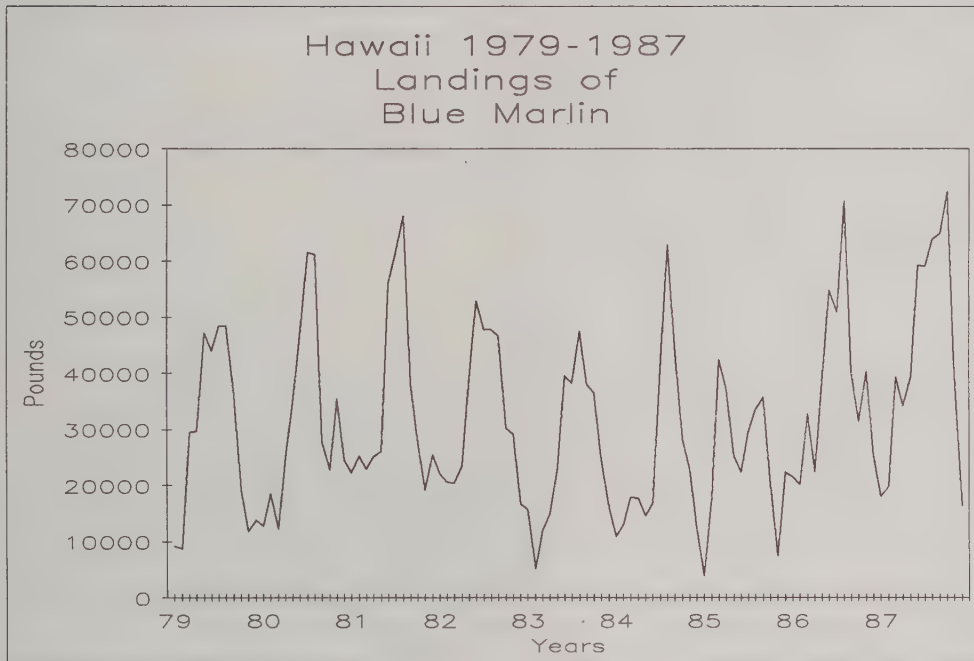


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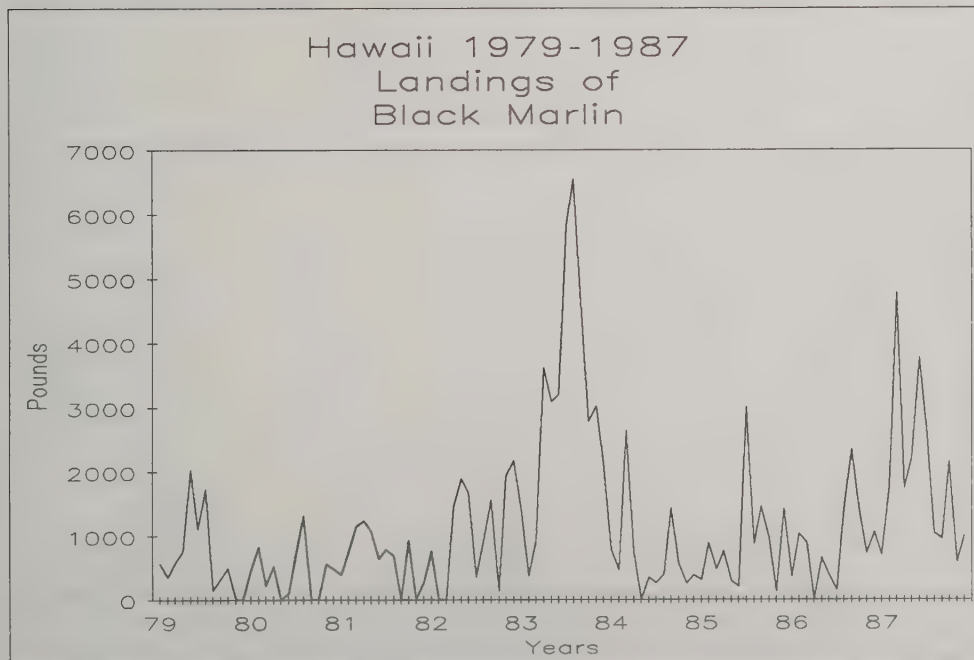


Figure V.4.5

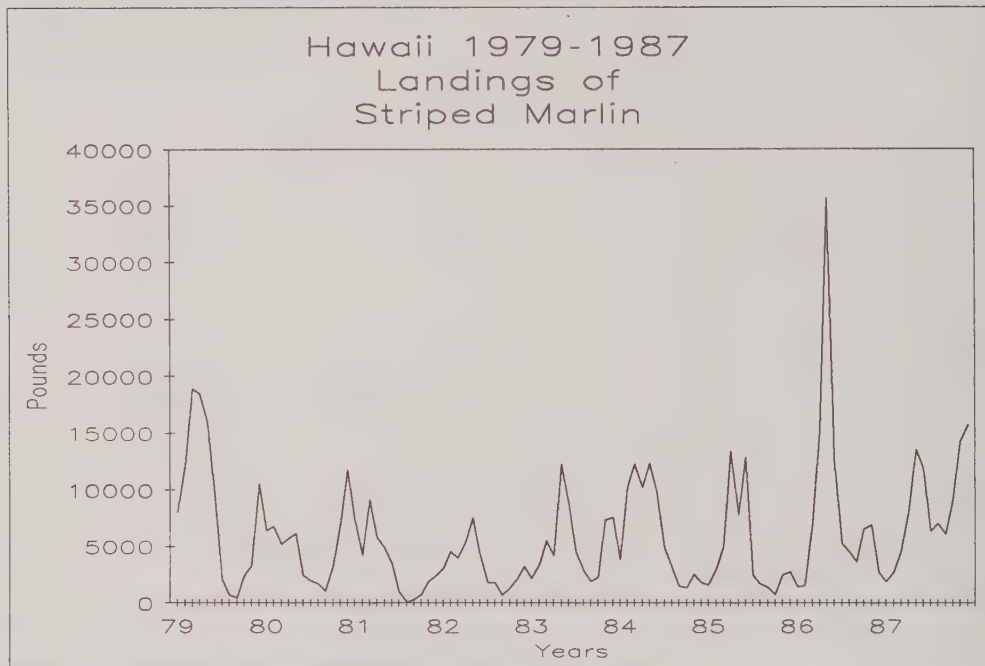


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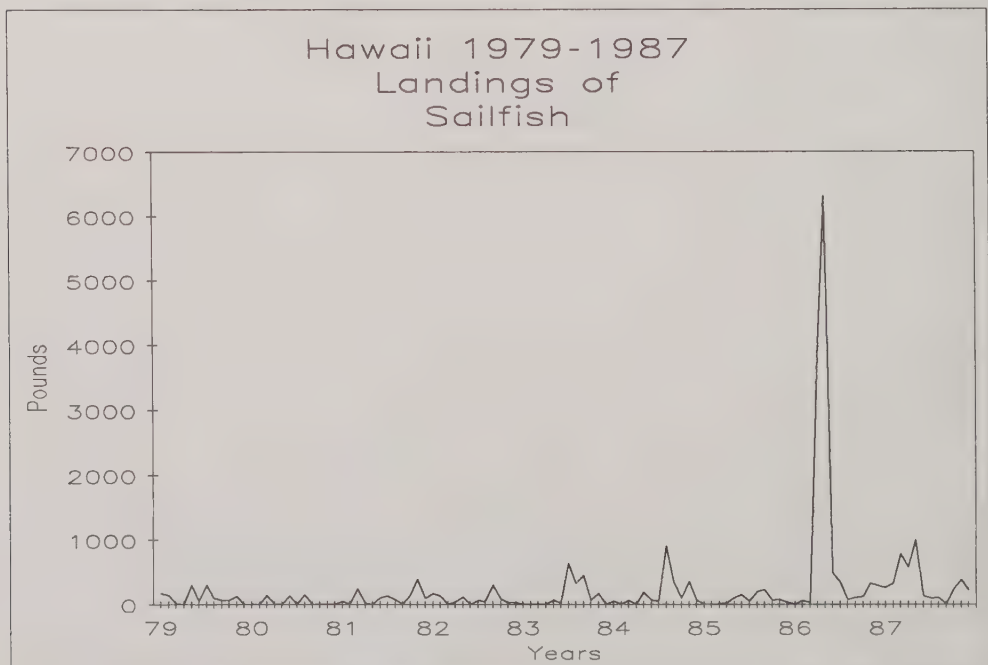


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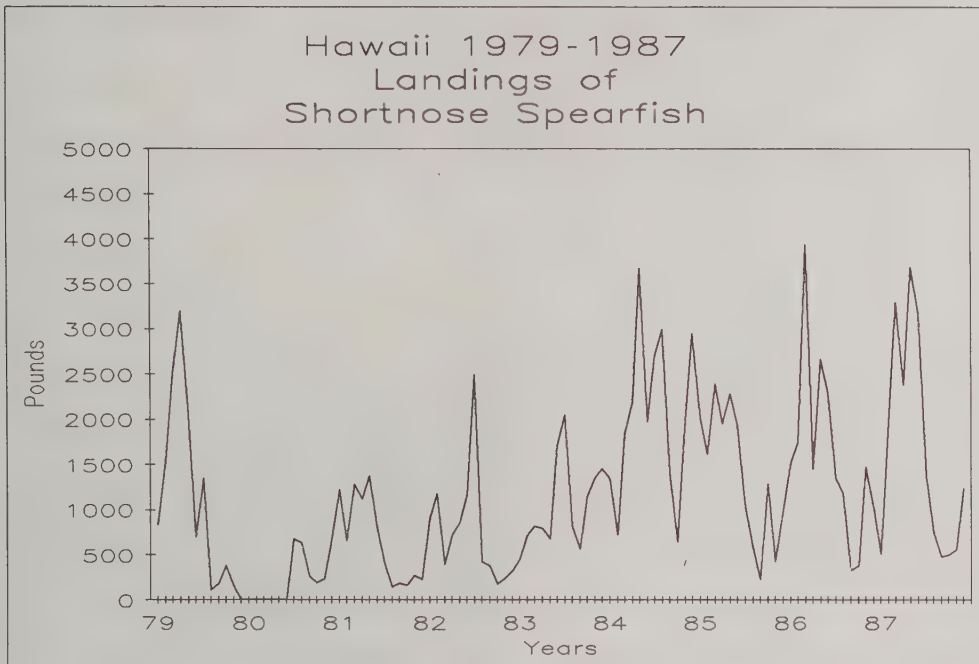


Figure V.4.8

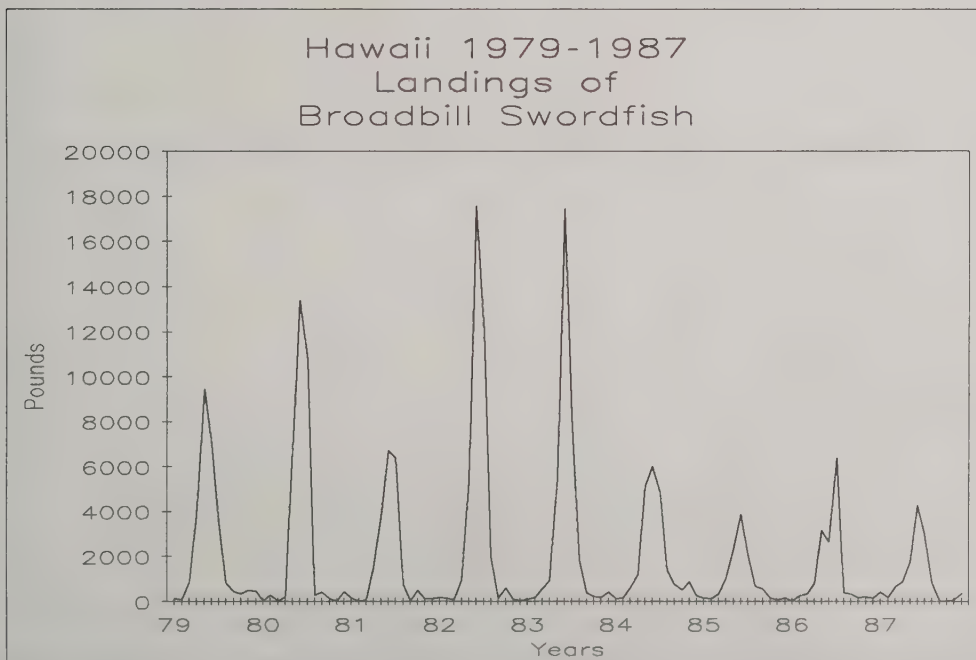


Figure V.4.9

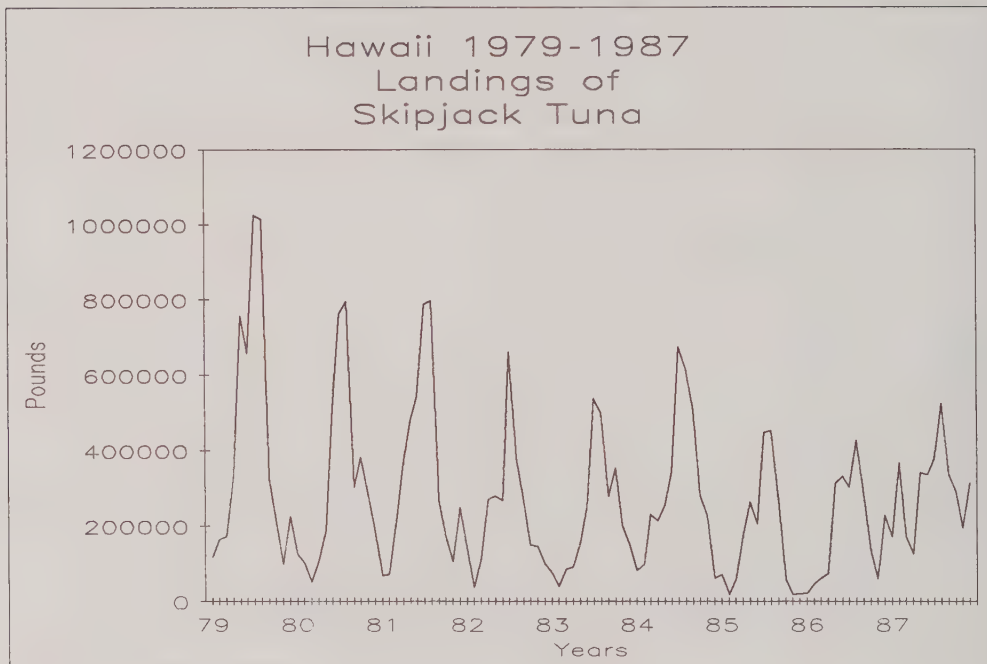


Figure V.4.10

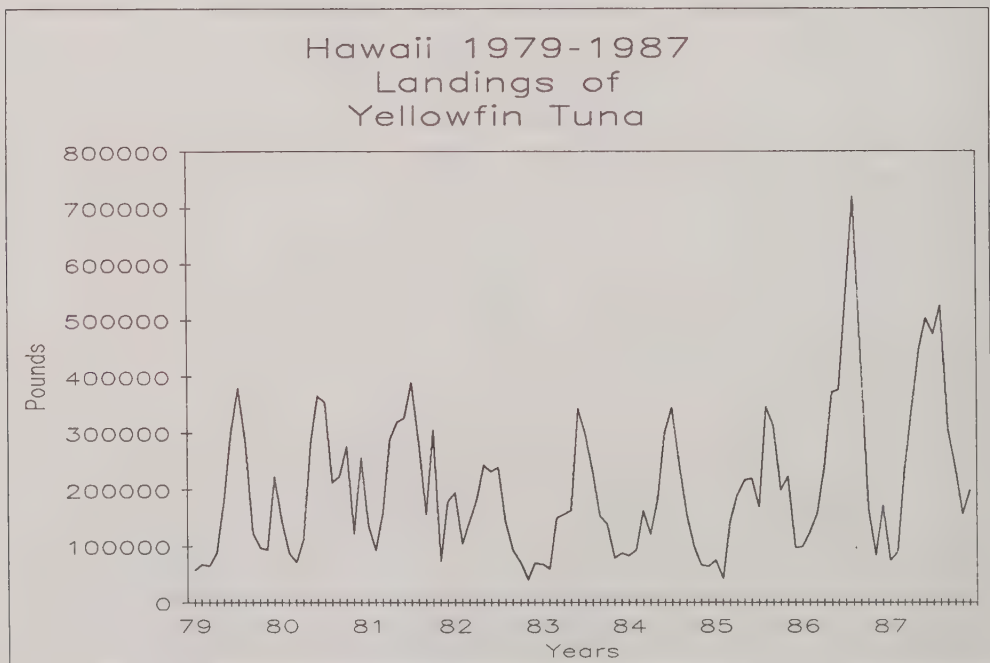


Figure V.4.11

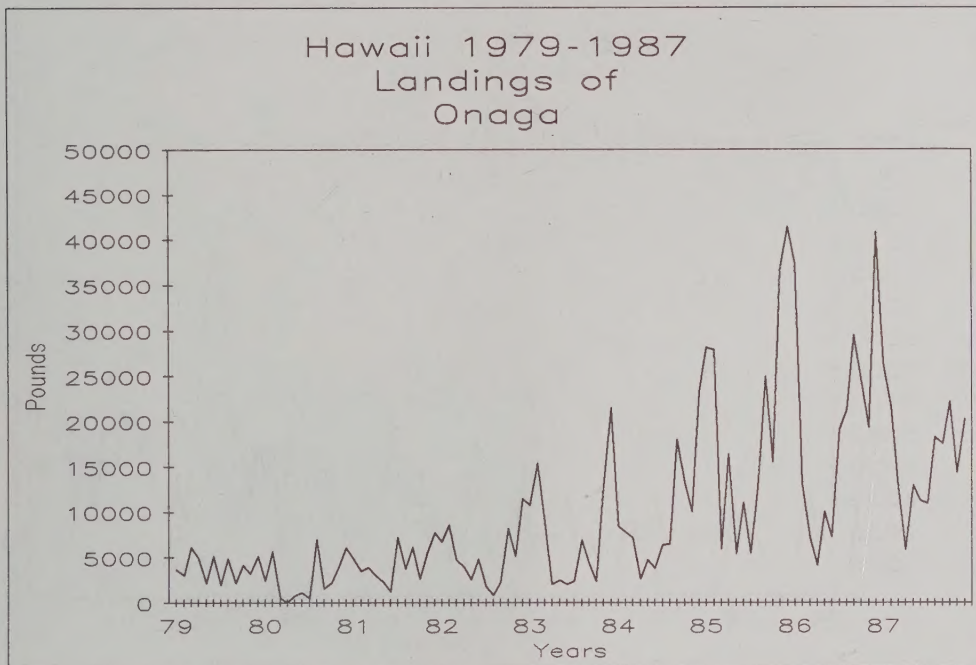


Figure V.4.12

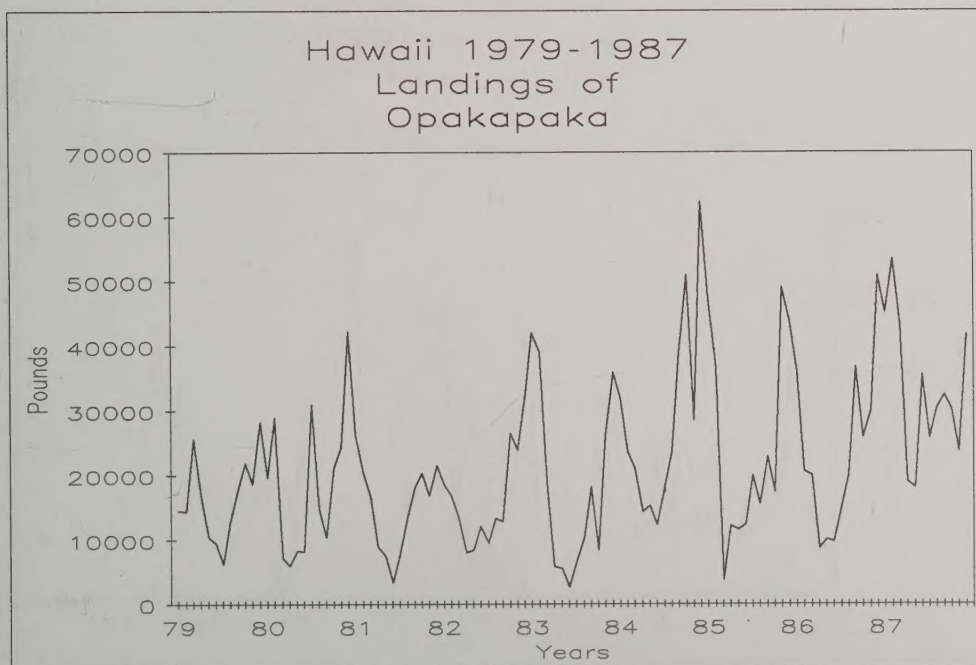


Figure V.4.13

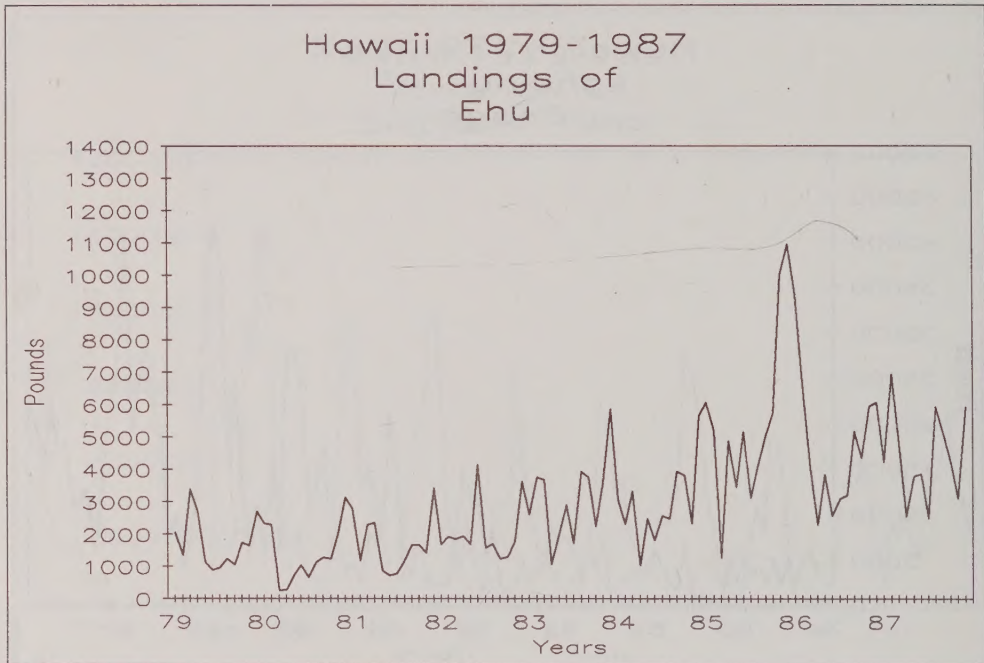


Figure V.4.14

